DEVELOPING A PRACTICE-LED FRAMEWORK TO PROMOTE THE PRACTISE AND UNDERSTANDING OF TYPOGRAPHY ACROSS DIFFERENT MEDIA

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Abstract

This study presents a pedagogic framework that offers a new approach, structure and content for the teaching, understanding and application of typography in cross-media communication environments. Current theory and vocabulary used to describe typographic practice and scholarship are based on a historically print-derived framework. As yet, no new paradigm has emerged to address the divergent path that screen-based typography has taken from its traditional print medium. This study argues that the current model of typographic education is unable to provide design students with appropriate models, concepts and grammar to explore the potential of typography in screen-based media. Hence, a re-evaluation of the current framework is proposed in order to develop new approaches that will reduce misappropriation of typographic principles and aesthetic values in screen-based media.

This study is composed of three research stages. Stage One (consisting of a literature and design application review) was used to develop an understanding of the current typographic application in screen-based media. Stage Two (consisting of a questionnaire survey and in-depth interviews) was used to investigate the relevance of current typographic knowledge in relation to screen-based media. Additionally, this stage helped identify critical issues surrounding current and future typographic practice. Findings from Stages One and Two were used as a basis to develop a new framework. This framework was subsequently tested and refined in Stage Three through action research projects (with Graphic and New Media design students) and peer reviews (with design educators and professional practitioners). The final framework consists of six key attributes: an integrated model of knowledge, cross-media skills, cross-disciplinary influences, it is communication-focused, flexible and adaptable. It reflects a future model of a convergent media, not a continued separation of print and screen. This framework consists of two distinct areas of knowledge: Global Skills (Form, Content, Expression and Context) and Specialist Skills (Hyper-textuality, Interactivity, Temporality and Usability).

It is concluded that the approach and knowledge-base used to teach typography must be modified to reflect the challenges posed by media convergence, where transferable global skills are emphasised across a range of media. Typography's knowledge base has to be expanded to include specialist skills derived from technological and social changes in communication technologies. The principal contributions of the study are: the identification of transferable global typographic skills; the introduction of specialist design skills required for effective cross-media type

application; presentation of an integrated model of typographic knowledge and practice; a curriculum guide aimed at helping design educators plan and deliver typography in graphic and multimedia programmes; strategies and approaches to help designers remediate their print-derived knowledge and lastly, as a subject reference guide for visual communication design students.

The framework is not offered as an absolute representation of western-based typographic knowledge for cross-media application but instead should be considered as a signpost to help understand the current transition of knowledge between print and screen. Additionally, this framework has been developed and tested within a single educational environment. As a result, variations in teaching and learning styles were not taken into account. Audiences are urged to treat the framework as a 'work-in-progress' model that can be refined through additional field-testing in other educational environments. And finally, the application of the framework within a professional practice environment would require a comprehensive review of practice-based concerns and a further simplification of the framework.

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Acknowledgements

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CHAPTER 1: INTRODUCTION

An Introduction to the Research Project, its Aims and Objectives and its Contribution to Knowledge

1.1 Background to the Research Project

This thesis is based on the study of typographic knowledge applied within graphic and new media education and practice. It has developed from a certain point of view, in this context, from a Malaysian-born graphic designer educated in a British university, practising initially in the print medium and subsequently progressing into screen-based media. As a result, its development and final realization embodies certain assumptions, interest and outlook that undeniably influenced the manner in which this study has developed. The origin of this study lies in my transition from a print to a screen-based designer. This transition can best be described by comparing two descriptions of typography from two prominent, yet different generations of designers:

> Typography has a specific purpose; of so arranging letters, distributing the space and controlling the type as to aid to the maximum the readers' comprehension of the text.
> Stanley Morrison (1951, p.4)

> Unlike book typography, this new screen typography dances; it sings; it shouts; it does somersaults and cartwheels, and then, when it settles down, just as you think you have got a hold on it, you mouse over a word and it transforms instantly into something completely different.
> Jessica Helfand (2001, p.125)

These two contrary statements illustrate how far typography has evolved from an environment that is mechanical, static and communication focused to one that is digital, dynamic and experienced focused. Yet our current frame of reference is still dependent on a print-derived framework and continues to reflect typography's print origin. Terms derived from printing and punch cutting activities 500 years ago (such as x-height, counter, baseline, descender, ascender, kerning, leading, tracking, em, en, pica and points) are continually being used to describe screen-based typography. Not only do we still use print-derived terms, we tend to think, write and read using a print model (Chartier, 1995). As the gulf between these two media expands, our ability to reconcile these differences using an out-dated model becomes increasingly difficult. The transition from print to screen involves more than taking our print model and adapting it for the screen. It requires a complete review of how we approach, view and apply typographic knowledge.

The emergence of the digital medium and its divergence into many other forms has presented designers with new challenges. Designers educated in the print medium have struggled to come to terms with this transition, especially in translating their typographic knowledge into screen

principles, while present generations of new media designers often find it difficult to grasp and apply principles developed for a different medium. It is not surprising then that designers are struggling to work in a medium where theories, technologies and applications are mutable. As Stephen Boyd-Davis points out,

> Designers must be able to give form to concept and content using an exceptionally wide range of disparate elements including graphics, music and sound, typography, text, animation and filmic imagery, all in an interactive context.
> (2000, p.65)

The aim of this study is to develop a new framework that will help graphic/new media design educators and professional practitioners improve their understanding and practise of cross-media typography[1]. This project originated from professional issues experienced during my transition from a print to a screen-based designer. Although originally trained as a graphic designer, I began to shift my professional activities to interactive and screen-based design projects. One of the main challenges faced during this transition was the lack of knowledge, discourses and references relating to the application of screen-based typography. Often I have had to rely on a patchwork of personal experiences and skills to develop my own models of knowledge appropriation. While this may be the most practical and direct method available to practitioners, it is not the most appropriate model for longer-term development of the discipline.

Typography, compared with other design skills and disciplines, is most often talked about as a 'black art' (Kinross, 1992; Jury, 2002). It is, as Jury says, 'an activity founded on impiricalism [sic] and, to the outsider, shrouded in secrecy' (2002, p.6). Typographic rules and principles which were initially driven by technical concerns, are now taken to be core in its education. This emphasis on rules gives an impression that typography is more mechanical rather than artistic. This misconception is not helped by an increase in time spent learning new technologies rather than the skill of type composition and communication. As a result, typography is increasingly being marginalized, particularly in new media design programmes, because it is no longer considered to be a core subject. A review of the current range of screen-based content (refer to Chapter 4) has indicated that although the use of the image is becoming more prevalent, text is still the predominate form of communication. Hence a reduction of typographic skills amongst future design practitioners will result in a continued loss of quality in screen-based

[1] Cross-media typography refers to the application of typography across a range of media, without an emphasis on any specific media. In this thesis, the term 'cross-media typography' is used to differentiate between the current conceptual model of typography (which is connected to the print medium) and an alternate model presented by this study.

communication material. This phenomenon can already be observed through numerous websites designed by amateurs without design training, but who have access to affordable web publishing software. Unless an effort is made to re-evaluate the current context of typographic knowledge and to update its frame of references, typography will be reduced to a highly specialized skill relevant only within a print-based environment. This would further alienate the subject of typography, moving it back to the 'black art' phase and contrary to the diversification of skills required by designers in graphic and new media design practices.

Attempts to theorize the subject of typography have either led to the creation of a historical model of typography and printing (Spencer, 1969; Gray, 1976; Gray, 1996) or to a descriptive and practical model of 'good' practices in typographic application (Morrison, 1951; McLean, 1980; Bringhurst, 1997) or to an ideological model (Tschichold, 1928; Gill, 1936). As yet, no research has emerged to address the impact of new media development on typographic education and practice through a comprehensive review of typographic knowledge. Instead, research related to screen-based typography is generally focused on two areas: legibility and technology. According to Kinross (1992), the preoccupation with legibility and readability issues began in the 1880s and was due to a change in attitude towards typography. Legibility research during this period raised the possibility that the role of typography was not simply to look beautiful but to be effective. More recent areas of research included the development of new technology by computer programmers in the late 1970s and 1980s at MIT and Stanford, to describe and display letters digitally (Staples, 2000)[2].

Originally, this study was designed to concentrate on the practise of design within a professional studio environment. However, initial findings revealed the need to address issues within an educational framework before the study of practice can be attempted. Therefore, the investigation has focused on the educational practitioner activity and environment in order that it might inform the development of a new framework. A consideration towards professional practice has been made by engaging designers in a review process at the end of this research programme. This process has provided the study with guidance on future developments of this framework within a professional environment.

[2] A review of the range and types of typographic research is located in Chapter 2, Section 2.4.

1.2 Research Aims and Objectives

The primary aim of this study is to investigate the hypothesis that the current body of typographic knowledge is an unsuitable model to meet the requirements of screen-based media. The secondary aim is to consider and subsequently develop an alternate context that will address the requirements and needs of future design educators and practitioners. Objectives derived from these aims are designed to investigate which aspects of current typographic knowledge are transferable across media, as well as to identify which characteristics of screen-based media have the most relevance for future typographic applications.

The original intention of the study was to develop a set of guidelines for design educators and professional practitioners relating to the application of screen-based typography. However, both aims were revised in order to reflect how the study had evolved after the first stage of data collection. Guidelines were considered to be too restrictive to accurately describe the outcomes of the study. Instead, the term framework was adopted as a way to present the outcomes as a conceptual structure with a specific approach to organizing and classifying typographic knowledge. Additionally, the outcomes became focused on an educational environment only. It was felt that the nature of the research questions required a focused investigation in one area of practice, with education providing a more suitable platform due to the framework's anticipated educational value. As such, the aims and objectives were revised to reflect these modifications.

1.2.1 Research Aim

Develop a practice-led framework to promote the practise and understanding of screen-based typography.

1.2.2 Research Objectives

The objectives set out to pursue this aim are:

- To conduct a review of current thinking about the relevancy of typography to the communication of meaning in digital environments, and to declare a position on this issue.
- To investigate the current context of type education and application in graphic design and new media design programmes.
- To review the current application of typography in screen-based projects by conducting a comparative study.
- To distil the critical design-making criteria of type for print that can form the basis of a new framework for screen-based typography.

- To conduct action research projects to explore and illustrate the utility of a new framework within an educational environment.
- To evaluate the action research project outcomes through peer reviews.
- To form recommendations for future research concerning the role of typography in screen-based media programme development.
- To form recommendations for future research in developing a practice-based framework.

In pursuit of these objectives, four key questions are addressed and considered throughout this study. They are:

- How is typography being understood and practised in screen-based media?
- Is the current context of (print-derived) typographic knowledge still relevant for screen-based interactive media?
- What are the critical issues that will affect the role and application of typography in a cross-media environment?
- How will these issues be addressed in a new framework?

1.3 Definitions

Graphic Design as defined by the American Institute of Graphic Arts (AIGA) is the profession that plans and executes the design of visual communication according to the needs of audiences and in the context for which communication is intended. They also defined a Graphic Designer as 'someone who plans, analyses, creates, and evaluates visual solutions to communication problems. Their work ranges from the development of strategies to solve large-scale communication problems, to the design of effective communication products, such as publications, computer programs, packaging, exhibition, and signage' (American Institute of Graphic Arts, 2006).

In recent times, new job titles have emerged to reflect the diversification of skills and roles of a graphic designer. The vocabulary of the practice is growing to include new job titles such as 'new media designer', 'interaction designer', 'web designer', 'information architect', 'multimedia designer' and 'interface designer'. In this thesis, the term Graphic Designer will be used to represent all designers who are involved in the design of printed visual communication (two-dimensional and three-dimensional) while the term New Media Designer will refer specifically to designers working predominately in screen and interactive media (four-dimensional).

The term screen-based media is used synonymously with screen-based interactive media in this research context. This term refers to specific forms of mass media digital technologies such as the Internet, interactive television, CD-ROM, DVD-ROM, video games and mobile computing, where content is accessed through a digital screen and two-way communication between the user and system is enabled. Screen-based media is sometimes described as part of a group of mass media based on new information technology. The field of study that has developed around these new cultural practices with computers playing a central role is described as 'new media'. Lister et al (2003, p.12) uses the term 'new media' to mean the following (emphasis by Lister):

- **New textual experiences**: new kinds of genre, textual form, entertainment, pleasure and patterns of media consumptions (computer games, hypertexts, special effects cinema).
- **New ways of representing the world**: media which, in ways that are not always clearly defined, offer new representational possibilities and experiences (as in immersive virtual environments, screen-based interactive multimedia).
- **New relationships between subjects (users and consumers) and media technologies**: changes in the use and reception of image and communication media in everyday life and in the meanings that are invested in media technologies.

- **New experiences of the relationship between embodiment, identity and community**: shifts in the personal and social experience of time, space, and place (on both local and global scales) which have implications for the ways in which we experience ourselves and our place in the world.
- **New conceptions of the biological body's relationship to technological media**: challenges to received distinctions between the human and the artificial, nature and technology, body and (media as) technological prostheses, the real and the virtual.
- **New patterns of organization and production**: wider realignments and integrations in media culture, industry, economy, access, ownership, control and regulation.

In the course of this study, these themes have all been touched upon in some form or another, however the study has focused more on the first three areas of new media as described by Lister et al (2003), which are 'new textual experiences', 'new ways of representing the world' and 'new relationship between subjects and media technologies' (where the study has focused on the designer's relationship with media technologies).

1.4 An Overview of the Research Methodologies Used

This study employs a multiple research design strategy (Robson, 2002) using both qualitative and quantitative methods. Its overall approach is action research, where the emphasis is on the iterative cycles of theory development, practical intervention and theory testing within each research stage. This approach is essentially data driven rather than theory driven. Data driven research is about investigating the current situation and being responsive to it, whereas theory driven research focuses more on allowing existing literature and knowledge to generate the research's theory (Dick, 2002, p.160-162).

There are three research stages in this study. They are:

- Stage One: Definition of research questions
- Stage Two: Typographic framework development
- Stage Three: Typographic framework evaluation and refinement

1.4.1 Stage One: Definition of Research Questions

The aim of this stage is to define the research questions and investigate the purpose, theory and methods set out at the beginning of the research project. The stage consists of two phases: literature review and design application review.

A wide-ranging literature review was undertaken in two main areas: visual communication and the new media discipline. Its main aim was to reveal the scope and breadth of ideas, theories and knowledge of the research area. The nature of the subject required a review of literature within a wide range of subjects including: typography, graphic design, communication studies, media studies, cultural theory, linguistics, design theory, design education, Human Computer Interface (HCI), new media theory, interaction design and film studies. A result of this literature review process was the development of a literature map consisting of primary, secondary and peripheral literature. This map illustrates the theoretical and conceptual relationships between key literature. Finding relationships between ideas, concepts and methodologies allowed the study to connect key themes and construct new knowledge structures in relation to the research subject. The map has been refined through a series of peer reviews with fellow design researchers during and after the literature review.

Following the literature review, an application review of design projects was conducted to identify current trends and usages of screen-based typography. A qualitative methodology based on comparative product analysis was adopted for this review. It compared the quality and application of typography used in both typographic and non-typographic projects. Comparison

between these two sets of projects helped identify the differences in the way typography is perceived and used in different genres of screen-based media. Additionally, it provided the study with a better understanding of the range of media and content available through screen-based media. This additional information has added to the theoretical knowledge gained from the literature review. The conclusion of the literature and design application review informed the study on areas of investigation in subsequent stages and guided the generation of questions for the questionnaire survey in Stage Two.

1.4.2 Stage Two: Typographic Framework Development

This stage is designed to identify possible approaches, structure and content of the new framework. It had two key data collection stages, and their findings were used to develop a working model of the framework. An online questionnaire survey was used to canvas opinions relating to the application and role of typography in screen-based interactive media. The sample consisted of British, American and Dutch participants engaged in graphic or new media design education and practice. Findings derived from the questionnaire data identified specific areas of investigation required for the development of a new framework, and emphasized the importance of knowledge from disciplines other than graphic design in this process. Hence, the interviews conducted after the questionnaire were used to explore these areas in detail, as well as to introduce expert opinions from outside the discipline.

Robson (2002) describes interviews as conversations with purpose. Thus interviews were used for in-depth and focused discussion of specific topics. Like the questionnaire, the interviews were also conducted remotely due to the varied geographical locations of the selected experts. In keeping with the data-driven approach of this study, grounded theory was used in the analysis of the interviews as it allowed the discovery of theory through data (Glaser and Strauss, 1967).

Findings from the questionnaire and the interviews were synthesized to develop an approach and structure for a new framework. The content of this draft framework was derived mainly from existing literature and models of good practice in the subjects of typography, graphic design and new media.

1.4.3 Stage Three: Typographic Framework Evaluation and Refinement

This final stage is aimed at testing the draft framework and evaluating the results in order to refine its approach, structure and content. There were two phases designed to deliver this aim. Action research projects were conducted with students in order to test the applicability of the framework within an educational environment, while peer review sessions were organized for

external experts to review and assess the framework. The action research projects used Greenwood and Levin's (1998) model of *co-generative research* via *co-generative learning*. In this model, the action researcher acts as the 'friendly outsider' who tries to bridge the 'world of scientifically constructed knowledge' of the outsider with the 'world of practical reasoning' vis-à-vis the 'local knowledge' of the insider (1998, p.113). Three projects were conducted with three different groups of graphic and multimedia design students from Northumbria University. Each project represented a single cycle of the action research process - plan, act, observe and reflect (Lewin, 1946).

The peer reviews were conducted as focus groups. In total, three focus groups were held, comprising two educational groups and one professional practice group. The participants consisted of prominent graphic, new media and typographic design educators and practitioners. In total, twenty-one participants from London and Newcastle took part. During each session a presentation describing the key approach, structure and content of the framework was delivered. Participants were then asked to discuss and comment on specific areas of the framework. Comments and suggestions from the peer review panels were significant to the final refinement of the framework and provided an external viewpoint on the applicability of the framework within a professional practice-based environment.

1.5 Summary of the Research Project

This thesis consists of ten chapters. Chapter One introduces the background, establishes the research questions, explains the aims and objectives, discusses the limitation of the research and finally describes its contribution to knowledge.

Chapter Two presents a review of literature in subjects and topics about screen-based typography. It describes the historical development of typographic knowledge and explores how changes in technology have shaped its model. This chapter places the study in the context of current educational and practice requirements within a cross-media design environment. Additionally, this chapter describes a mapping process that enabled the study to visualize and facilitate conceptual connections between key ideas and philosophies across disciplines. The result of this mapping process is a literature map (see Figure 2.3 in Chapter 2). The map developed into a valuable tool for the study to facilitate the understanding and construction of prior knowledge in the research enquiry. At the same time, it provided the study with an immediate method to communicate the scope and focus of the research to external audiences.

Chapter Three outlines the research methodology, describes three distinct research stages and sets out the rationale for the use of an action research framework. There are two main sections: Research Methodology, and Research Design. The first section reviews methodological approaches employed in the field of research (including both general and specific methods to design research) and places the research within this context. The second section describes the actual methods applied in this study.

Chapter Four describes the process, analysis and findings of a design application review. This review is a continuation of the literature review and informs the study on the current trends and usage of screen-based typography. It begins by identifying the different types of interactive screen media and the types of content available through them. Then it discusses and selects suitable criteria with which to analyse selected design projects. And finally, it concludes by presenting the findings derived from the media and design application review.

Chapter Five marks the beginning of the main body of investigative work. It describes a questionnaire survey conducted with design educators and professional practitioners. The purpose of this survey was to obtain a clearer understanding of opinions held by these participants on the application and role of typography in screen-based interactive media. This chapter begins by discussing the questionnaire design, sampling criteria and analysis methods. Finally, five key findings of the questionnaire are presented.

Chapter Six describes the analysis and findings of interviews conducted with nine subject experts across different disciplines. The interviews were designed to explore the issues identified during the questionnaire stage in a more detailed manner, and to broaden the framework's knowledge base with external input from related disciplines. These experts represented a range of external disciplines such as Interactive Design, Design and Media Theory, Hypertext and Communication Media Theory and Digital Typography. Findings from the interviews are presented in four thematic sections; the first section presents an analysis of the current application of web-based typography. The second section identifies influencing factors on the application of screen-based typography, while the third discusses the current and future role of typography within screen-based media. The last section brings together discussions surrounding the required attributes of a new framework.

Chapter Seven introduces a new framework that has been developed in this study to aid the understanding, learning and application of typography in a cross-media environment. It will describe in detail the framework's approach, structure and content.

Chapter Eight discusses the three action research projects conducted with students at Northumbria University. The aim of this stage is to evaluate the usage of the framework within an educational practice-based environment. It begins by describing the subjects of the study, setting and background, focusing on the specific requirements of students and tutors respectively. It goes on to describe which model of action research was employed and how data was collected and analysed. Each project is discussed in detail sequentially, highlighting the modifications made after each project. Finally, the findings from all three projects are synthesized to derive conclusions with which to inform the next stage of development of the framework.

Chapter Nine presents the results of the peer review sessions. These sessions enabled the framework to be evaluated by an external audience. Additionally, it presents and discusses the revisions made to the framework as a result of the peer reviews and action research project outcomes. The peer review (consisting of educators and professional practitioners) provides a powerful validation of the suitability and relevance of the framework, not only within an educational environment but also in a practice-based one. The review is an opportunity to discuss the value of the framework outside of an educational model and provide input towards the development of the framework for a practice-based purpose.

Chapter Ten presents a summary and conclusions drawn from the study. Recommendations arising from the current study and suggestions for future research in both the educational and practice-based environments are also considered. Finally, this chapter reflects on the research programme as a whole.

1.6 Limitation of the Research

This thesis is restricted to the study of typographic knowledge applied within graphic and new media design education and practice. Application of typography in other design disciplines is not within its remit.

The action research projects were conducted in Northumbria University. As a result, the application of the framework illustrates only one model of a programme structure and does not reflect other models of design programmes offered at other universities. A contextual review was carried out in order to identify these different models and to position Northumbria University's programmes in relation to them. This review identified three general models adopted by universities offering graphic or new media (sometimes referred to as multimedia or interactive) design programmes. They are listed in Table 1.1.

Models	Description
Model 1	Institutions offering a graphic design (GD) programme, with implicit or explicit description of pathways in New Media / Multimedia (NM/MM) subjects
Model 2	Institutions offering a separate GD and NM/MM design programme
Model 3	Institutions offering only a GD programme

Table 1.1. Combination of Programmes Offered by British Universities in Graphic and New Media Design

The review also identified undergraduate programmes offered by Universities emphasising the technical or artistic aspects of multimedia. However, these examples were not included in the review as the study focuses specifically on programmes emphasising design as their main discipline. Northumbria University was categorized in Model 2 as it offered separate Graphic Design and Multimedia Design programmes. A cross section of institutions was chosen from the Times League Standings in Art and Design rankings. A total of 23 institutions were reviewed. The most common model was Model 1, where graphic design programmes offer students opportunity to specialize in New Media / Multimedia subjects. The second most popular model adopted is Model 2, followed by Model 3. Although the principal investigation focused on the specific needs of the undergraduate programmes at Northumbria, it covered a broad base of educational requirements. The study suggests that the results can be generalized to other models of teaching practice, however it is understood that there may be other factors arising as a result of more field testing.

Additionally, the study recognizes the variations in teaching styles of educators and the different learning experiences of students. It has not focused on how these variations have an impact on the effectiveness of the framework. It is acknowledged that this will have an important bearing on the adoption of the framework. Audiences are urged to treat the framework as a 'work-in-progress' model that could be refined, as it receives more field-testing.

This new framework was developed and tested within an educational environment therefore, in its current state, will be unsuitable for immediate application in a professional practice context. This study acknowledges that the framework would require a comprehensive review and further modifications in order for it to become a practical tool for designers. These suggested modifications are discussed in Chapter Ten.

Finally, it is acknowledged that design education and practice is becoming more widespread and popular in a global arena. However, this study has been limited to Western society, in particular the Anglo-American, English speaking cultures. The focus has been on design industries that are mature and have had at least 50 years of development as a professional discipline. This allowed the study to trace the development of typographic knowledge within a stable industry and develop a solution that has continued relevance for other maturing markets.

1.7 Contribution to Knowledge

The emergence of digital tools and communication media has brought many changes in the way we work, think and interact with communication media. However, up till now, there have been minimal attempts to conduct a review of existing typographic knowledge in light of these changes (refer to Chapter 2: Section 2.4.2 and 2.4.3 for a review of past and current typographic research). This study attempts to address this knowledge gap by looking predominantly at the problems encountered in the practise of typographic application. It differs from other research of this manner in that it attempts to identify and set out ways to address these problems from a practitioner's point of view, rather than developing a theory-based model. Secondly, it uses media studies to explain the cultural shift from print to screen and to help identify suitable strategies for the development of this framework. Finally, it has applied a broader investigation into external disciplines in order to build up new typographic grammar and references related to screen-based media.

The main value of the study is the establishment of a practice-led framework for the practise and understanding of cross-media typography. In summary, the value of the study has been to:

- Evaluate the relevance of current context and content of typographic knowledge to the requirements of screen-based media.
- Create and demonstrate an integrated model of typographic knowledge for educators and designers to facilitate their understanding and practise of typography in screen-based media.
- Identify transferable global typographic skills applicable across print and screen media.
- Introduce specialist design skills required for effective cross-media type application.
- Enable designers to remediate their print-derived knowledge with the needs of screen-based media.

CHAPTER 2: LITERATURE REVIEW

A Review of the Major Theories, Issues and Debates Relating to Screen-Based Typography

2.1 Introduction

This review starts by looking at how designers have learnt to adapt their current knowledge and use the most appropriate strategies for the digital medium. It also looks at historical examples where there has been a significant technological leap, for example from oral to literate and from written to printed material. Understanding how society adapts to new technology has informed the study on the best way to facilitate this change. However, in order to establish the relevance of this new framework, it is necessary to evaluate how relevant the current body of typographic knowledge has been and identify ways in which a new framework will address the future requirements of the screen medium. Identifying differences and similarities between print and screen culture will enable the creation of a framework suited for a design environment that increasingly requires cross-media solutions.

Before the main body of the review is presented, it is important to discuss the process undertaken for this literature review. This is because the evolutionary and collaborative nature of this review has helped define the focus of this study, and has been instrumental in highlighting the conceptual connections across disciplines. The outcome of this process is a literature map, presented and discussed in the next section.

2.2 Literature Map

2.2.1 Purpose and Development

A literature review is an essential starting point for any piece of comprehensive research. An in-depth literature review will reveal the scope and breadth of ideas, theories and knowledge within the research area. Hart writes that the literature review 'is integral to the success of academic research' (1998, p.13). He defines a literature review as:

> The selection of available documents (both published and unpublished) on the topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfil certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to the research being proposed. (Hart, 1998, p.13)

The process of this literature review involves the searching and evaluation of numerous and varied bodies of literature across many disciplines, having to focus not only on print but also on the emerging digital culture. The idea to map the literature arose from my need as a researcher to organize and contextualize theories, arguments and themes derived from the review. Mapping is an easy and immediate method to visualize knowledge. Information that needs to be communicated must be translated from a multifaceted representation into a two-dimensional surface. At its most basic level, to map is to visualize and communicate a specific body of information. Maps are useful to emphasize spatial relatedness, classification and connection. Almost any body of information can be mapped out. As MacEachren (2001) explains, the role of mapping has evolved from being an information storage and communication device to a method of processing and analysing information.

The visualization of the literature has allowed me to use the map as a tool to facilitate the understanding and construction of prior knowledge discovered during a conventional literature review. Both methods (visualization and textual reviews) were used in parallel with each other to build a theoretical base for this study. Literature were reviewed throughout the study, with the map guiding its contextualization. The literature map was designed as a 'live' map, in that the links, focus, structures and relationships of the themes would change and shift in accordance to the development of the study. The map has gone through several versions and Figures 2.1 to 2.3 provide a visual summary of the major changes. The 1st version was developed at the beginning of the study (refer to Figure 2.1). It attempted to represent the breadth of topics related to the study, but lacks any depiction of hierarchical relationships. The 2nd version (refer to Figure 2.2) reflected a more integrated and organized approach to the topics and themes. Its focus at that

point in time (during Stage One and Stage Two of the study) was on the differences between print and screen-based media, and the identification of specialist skills. Hence the emphasis was on understanding new media development and exploring relevant subjects such as Interactivity, Human Computer Interaction, Hypertext and Virtuality. The initial development of this 2nd version also had the benefit of undergoing an external review from design researchers.

The 3rd and final version (refer to Figure 2.3) incorporates findings from all three stages of the study, resulting in an increase in educational and design theory, and the reduction of peripheral topics relating to new media technologies. The scope of the literature map was condensed and simplified in order to reflect the final theoretical focus and conclusions derived at the end of this study. It also indicates a shift in the purpose of the framework, from a professional practice to an educational practice environment. The focus during this latter stage of the study was on exploring similarities between media, and identifying cross-media skills.

Figure 2.1. Version 1 of the Literature Map

V1 DYNAMIC LITERATURE MAPPING: TYPOGRAPHY IN SCREEN-BASED MEDIA | Visualising Conceptual Connections Between Key Literature

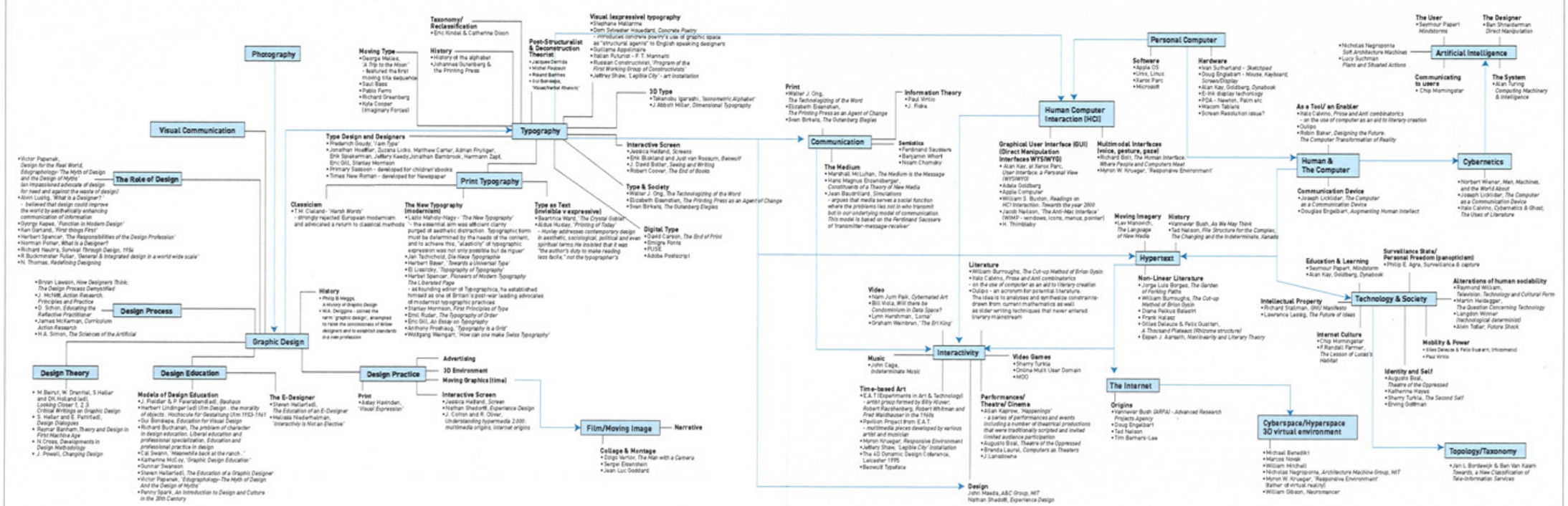


Figure 2.2. Version 2 of the Literature Map

V2 DYNAMIC LITERATURE MAPPING: TYPOGRAPHY IN SCREEN-BASED MEDIA | Visualising Conceptual Connections Between Key Literature

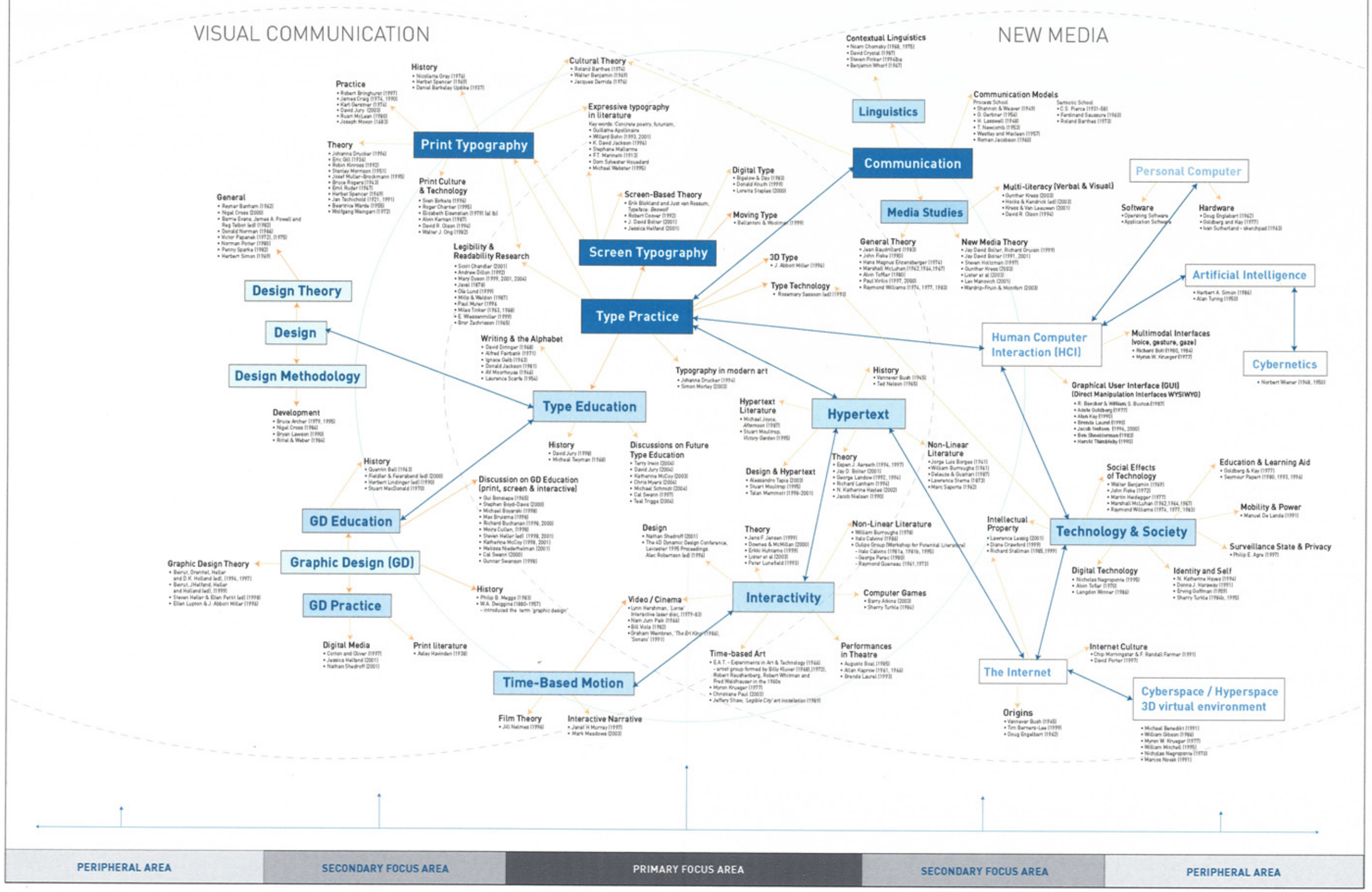
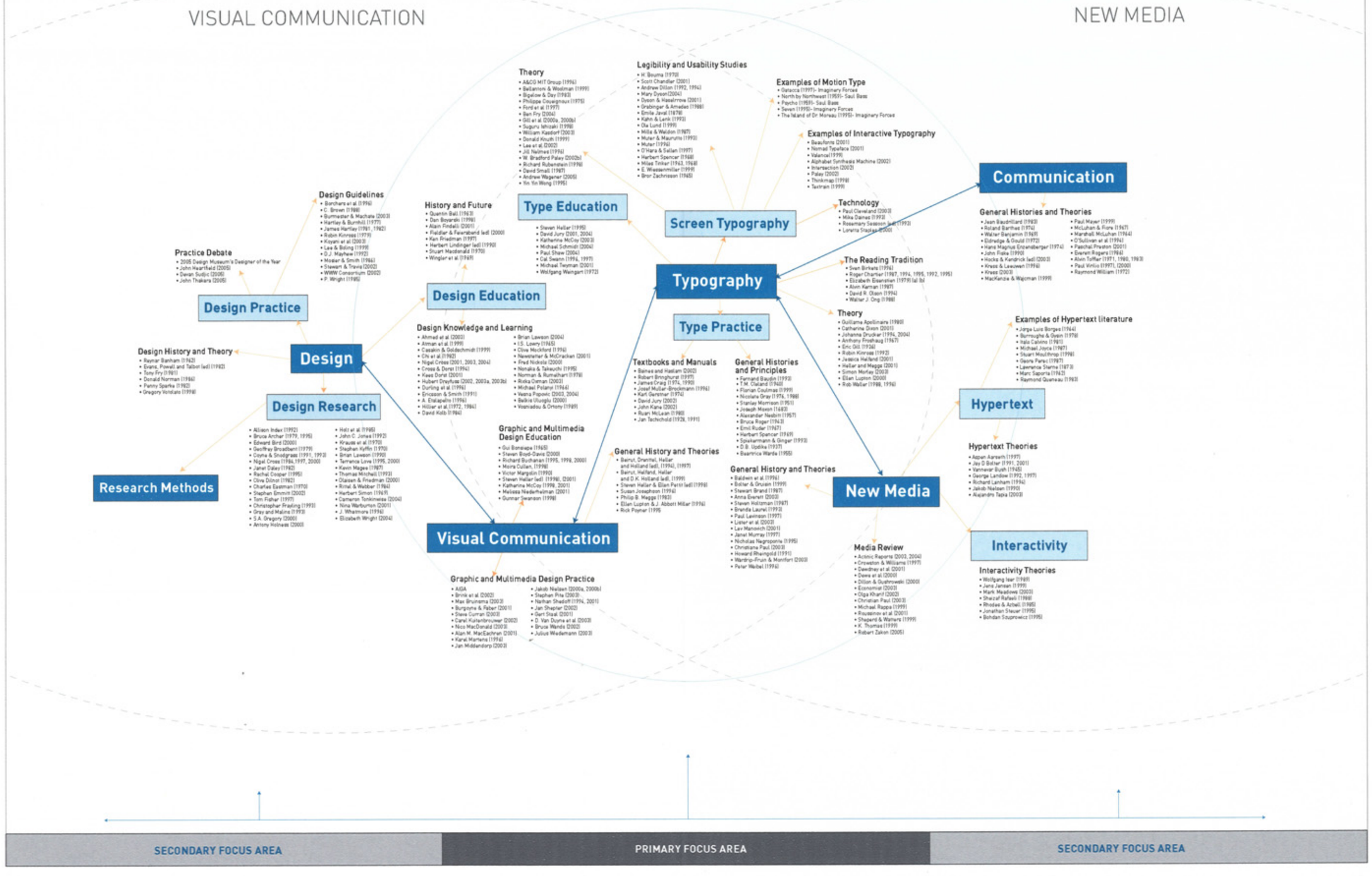


Figure 2.3. Version 3: Final Literature Map

V3 DYNAMIC LITERATURE MAPPING: TYPOGRAPHY IN SCREEN-BASED MEDIA | Visualising Conceptual Connections Between Key Literature



2.2.2 External Contributions and Validation

An important aspect in the developmental process of this map was the contributions of fellow design researchers and practitioners. Their input provided an external validation to the selection of topics regarded as relevant to this study's research questions. The map was the ideal medium to provide an overview of the scope and focus of the study. It also proved to be an effective means of engaging participants to reveal their implicit knowledge and attitudes towards their own and other disciplines. Having participants from outside the typographic discipline gave the study an opportunity to identify alternate ontological and epistemological viewpoints that might be different from the study's standpoint.

Two sessions[1] were held between the development of the 1st and 2nd versions of the literature map. One session was held with design researchers and practitioners, and the other with students. Additionally, the map was presented at the 5th European Academy of Design Conference (EAD), held in Barcelona in April 2003[2]. Participants were invited to contribute to the development of the map by:

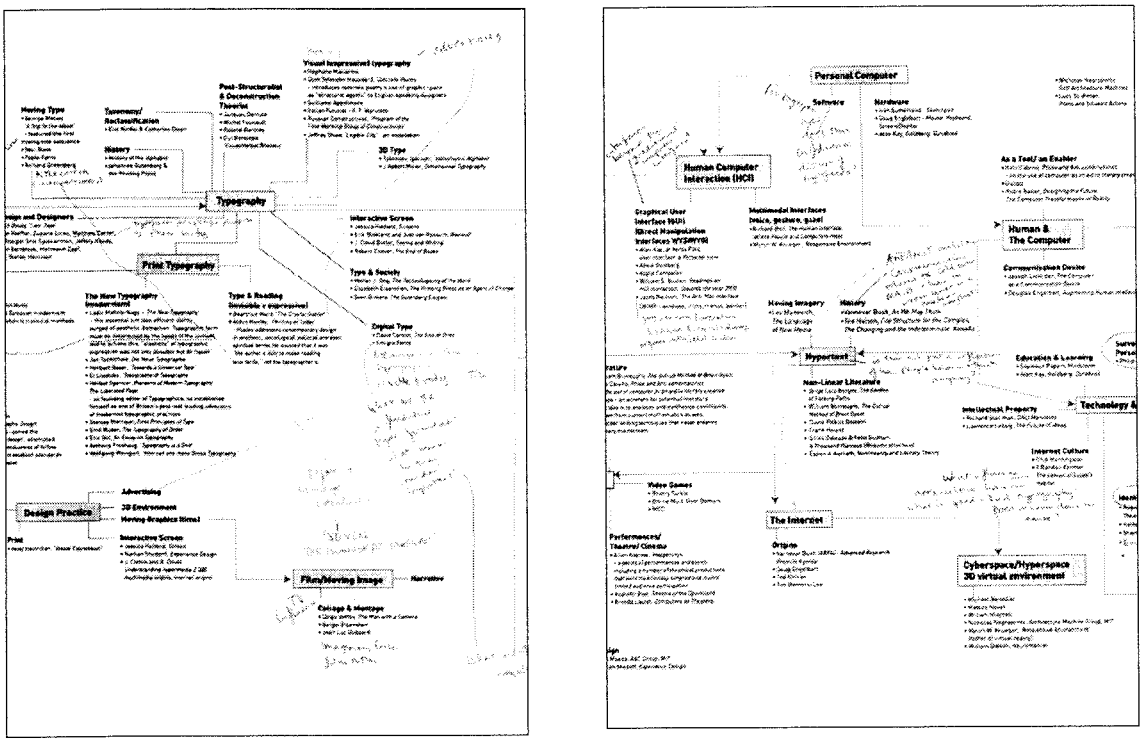
1. Adding any literature which they felt was missing from the map.
2. Adding, deleting or rerouting existing contextual connections indicated by the researcher on the map.
3. Highlighting 'hot' issues, which have a higher relevance to the study and should be given more emphasis in the research.

Comments and suggestions from participants have subsequently been included in the map. Figures 2.4 and 2.5 are close-up examples of the annotated posters collected during the first session[3].

[1] The first session was conducted at the Centre for Design Research, Northumbria University, where this study is based. The second session was conducted with Graphic Design students from the same university. A brief Power-point presentation was given to explain the aim of the literature map and to provide a contextual understanding of the subjects and classification. The participants' design backgrounds from the first session were varied, ranging from Product Designers, Graphic Designers, Design Researchers to Medical Product Researchers.

[2] The full paper presented at this conference is located in Appendix 2.1

[3] Full version of these commented posters are located in Appendix 1.1



Figures 2.4. and 2.5. A Close-up of the Literature Map with Participants' Annotations

2.2.3 Areas of Review

The literature was grouped based on its association with two general areas of practice: visual communication and new media. Definitions used for the purpose of this literature mapping are listed below.

> *Visual Communication* is a field of study within the design discipline that refers to the usage of a single, or a combination of any, graphic, photographic, moving imagery or textual element for the purpose of communicating a message to an audience.

> *New Media* is a field of study that refers to the cultural practices that have developed with the computer playing a central role in the medium of production, storage, distribution and communication.

Further classifications were added under each of the two principal topics. These are referred to as Subject Headings. Subject Headings are useful labels to group topics relating to a subject. This list is not hierarchically organized, though the spatial placement of each Subject Heading illustrates its relative connection to others. Close proximity of Subject Headings indicates their close association in relation to the research context.

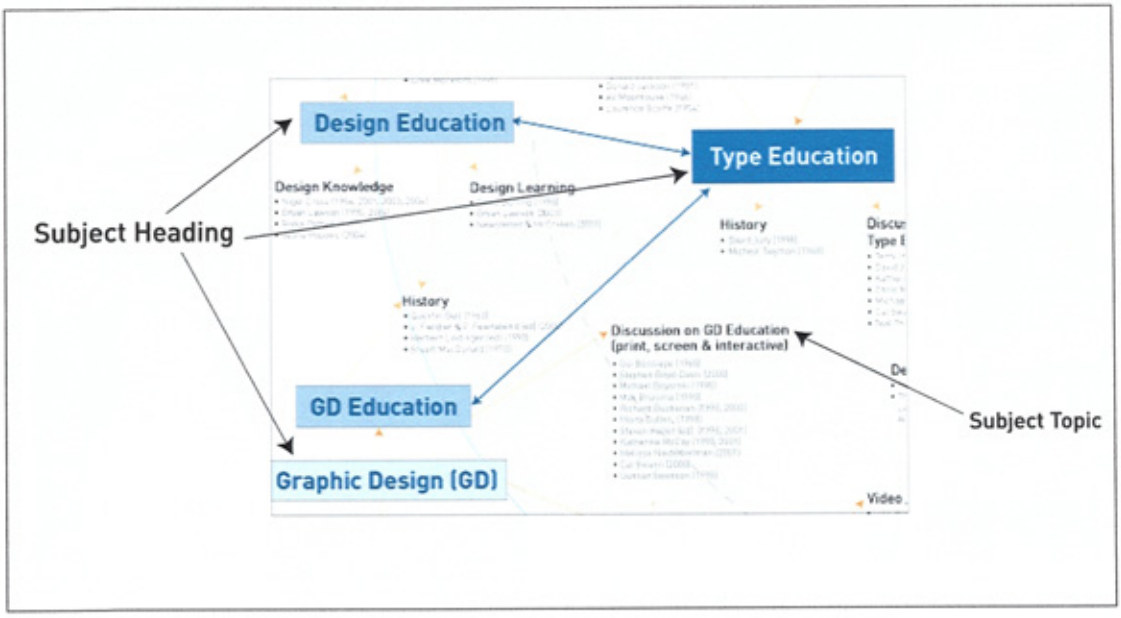


Figure 2.6. A Close-up View Indicating the Classification Levels in the Literature Map

Each Subject Heading contains several Subject Topics (refer to Figure 2.6). Additionally, they have been allocated a different gradient colour background to indicate its level of relevance and importance to the study. The level of relevance recedes in relation to the colour tint. A secondary role of the map has been to help frame the research boundary and to focus the literature search on relevant key topics. Inclusion of peripheral Subject Headings in the map provided a more holistic overview of the research enquiry. This was crucial because, as the study widened, the issues that were investigated were derived from different disciplines.

It must be stressed that the classifications put forward at the beginning of this process were neither fixed nor definitive. They were considered as signposts, assisting the study in navigating through mass amounts of ideas, concepts and methodologies encountered at the beginning of the literature search. This map is divided into three areas: primary, secondary and peripheral. The range between primary and peripheral indicates the level of importance and relevance of the literature to the research study. As the literature search widens, the list of classification subjects has expanded and changed. This map illustrates the relationship between key authors of different subjects but does not differentiate between stylistic, methodological, argumentation, theoretical, influential, historical and belief connections. This is achieved in the more comprehensive textual review of the literature, located in the next sections of this chapter. Figure 2.3 is the definitive version of the literature map and reflects the textual review written in this chapter as well as complementary reviews undertaken during different stages of the research. For example, most of

the literature reviewed around the Hypertext and Interactivity topics is used to develop the typographic framework and is discussed in more detail in Chapter 7, whereas the next sections of this chapter will discuss the topics, theories and arguments surrounding the overall research questions of this study.

2.3 What is Typography?

2.3.1 Production and Purpose

From the time when a symbol was first carved onto a cave wall, the inscription technology and medium surface have always been intrinsically linked to the form and output of communication design (McCoy, 2003; Daines, 1993). Drucker (2004, p.78) suggests that each technology 'suggests possibilities for letterform design: clay and stylus, brush and ink, drawing pens and vellum, metal type, steel engravings, paper and pencil, ballpoint, photography and photomechanical devices, and digital type'.

Changes in inscription and media surface technology have always been an important factor in the development of letterform design and have to a large extent shaped the discipline of typography. However, as Drucker (2004) argues, this is not the only factor. Our concept of letters is equally important in influencing how we define letters. Drucker views that the limit of what a letter can be 'is always a product of the exchange between material and ideational possibilities' (2004, p.81). This framework of conception is marked by our acknowledgement that a letter is a cultural artefact, and by that token, designed according to the parameters on which it can be conceived. If the purpose of the letter is to express a particular style or ideology, the conception of a suitable typeface will be forthcoming, no matter what technology is available. By examining the history of letterforms, Drucker identified many moments where technological developments or conceptual leaps became out of synch with each other. For example, the thin serifs of the Bodoni typeface were not necessarily suited to the letterpress technology of the 17th century; however, its form represented the rational modern design aspired to during that period. As Drucker acknowledges, 'sometimes, technology leads, sometimes, it does not' (2004, p.81). As a result, this literature review will focus on the technological and cultural aspects in an attempt to understand how their relationship has shaped typographic development.

2.3.2 The Manuscript Culture

The term 'typography' was coined from a Greek word, in order to describe a method by which 'calligraphy' could be written without a pen (Baudin, 1993). Hence, it seems natural to trace the history of typography back to the invention of the alphabet. The development of the Roman alphabet has a long and varied history. A generally accepted version refers to the Phoenicians, who created a base alphabet (containing 22 letters) from which the Greek and Roman alphabets were derived. Under the Greeks the Phoenician alphabet was adapted, both in how it was inscribed and in its form. The Greeks changed the Phoenicians' right-to-left writing style to the current Western convention of left-to-right style. They also developed a more rounded writing style called the uncial, which has the advantage of being easier to write. This was due to its

rounded letters, which used fewer strokes. Uncials were not the only examples of how inscription tools and their medium influenced the development of the written form. For example, Greeks made their pens from hard reeds, cutting a nib with a slit in the middle to allow ink to flow into it. These pens gave a totally different character and forms compared to the soft reeds used by the Egyptians to 'paint' on their papyrus.

The alphabet system developed by the Greeks came to the Romans during the 6th century BC. The Romans made a few of their own modifications, for example changing the Greek letter Z (zeta) to G until the current form of the Latin alphabet emerged. In terms of form, the Romans created the elegant Capitalis Monumentalis (Monumental Capitals), specially designed to celebrate and mark their achievements on monuments. These stone monuments were carved with these letters using a hammer and chisel. It has been speculated that the appearance of the serif was originally based on the chisel's ending stroke. Others have argued that the serif originated from the sign writer's short gesture before lifting the brush stroke to sharpen the terminal (Nesbitt, 1957; Meggs, 1998). Regardless of which tool initiated the appearance of the serif, the relationship between tools and the Romans' aesthetic values has left a permanent mark in the conception of contemporary capital letters.

Prior to the invention of printing, manuscripts were copied by hand. During the Christian era, monks in monastic scriptorium were responsible for creating manuscripts written on parchment or vellum. By that time, the codex format had replaced the scroll as the de facto manuscript form. However, despite these innovations, the cost and time involved in preparing materials, copying the text and finally illuminating it meant that only the rich and powerful could afford these manuscripts. This all changed with the invention of the movable type printing press.

2.3.3 The Mechanisation Culture

The introduction of printing in the Western world dramatically changed the way knowledge was disseminated and, in Eisenstein's words, 'revolutionized all forms of learning' (1979, p.3). Printing with wooden blocks (xylography) in China was used as early as the 8th century. The Chinese were the first to experiment with and successfully employ movable printing blocks (Coulmas, 1999). Due to the large number of characters in their language, movable block printing did not create such an impact as it did in the Western, alphabetic world. Although the Chinese continued to use wood block printing, they did not develop the technology further. However, according to McLean (1980), it was the knowledge of metal and not block printing which led to the invention of movable type in Europe. Johannes Gutenberg was a goldsmith who lived in Mainz, Austria. He used his knowledge of metal casting to develop the world's first metal

movable type printing press in the 1450s. In doing so, Gutenberg introduced to Europe, more than three centuries ahead of the general adaptation by industry, the 'theory of interchangeable parts' which is the basis of all modern mass-manufacturing techniques (Eisenstein, 1979, p.32).

The earliest surviving printed book is Gutenberg's 42-line Bible, set in traditional Blackletter typeface, which was the common script in Germany at that time. Printing soon spread throughout Europe, driven by high demand for books from the emerging literate middle class. Early printed books sought to mimic their handwritten counterpart and were hardly distinguishable from manuscripts. Again, this demonstrates that while technological advancements had made printing possible, the conceptual leap required for its application was lagging behind. The public were not ready for letters that did not resemble handwritten forms. However, by the early 16th century, printed books were gaining in popularity. This allowed printers to freely develop their own style and design conventions. The public were also beginning to develop a new aesthetic and visual language for the printed book. It was at this point that the discipline of typography really began. New typefaces were cut and cast, while different printers experimented with varieties of page layouts. Some of the most famous printers during this period included Christopher Plantin, Claude Garamond, Robert Granjon, Geoffroy Tory, Simon de Colines, Nicholas Jensen and Aldus Manutius.

Initially, early printers also took on the roles of publishers and writers, as well as typographers. These printers were involved in all aspects of printing, from designing and cutting typefaces to designing and executing the typographic layout of the pages. However over time, these roles started to diverge and became specialized aspects of the printing industry. Perhaps it is not surprising that this division of intellectual labour occurred due to the expansion of the printing industry. Kinross (1992) suggests that the separation between 'printing' and 'typography' was initially described by Joseph Moxon in his book *Mechanick exercises: or the doctrine of hand-works applied to the act of printing* (1683):

> By a typographer, I do not mean a printer, as he is vulgarly accounted, any more than Dr Dee means such a one, who by his own judgement, from solid reasoning within himself, can either perform, or direct others to perform from the beginning to the end, all the handy-works and physical operations relating to typographie.[4]

[4] Moxon, Mechanick exercises, p11-12 (spelling and punctuation of the edition retained)

Moxon's definition refers to someone who has the ability to compose and direct, rather than one who is part of the production team. This divergence between publisher/producer and typographer continued for 500 years, until the arrival of the digital process.

2.3.4 The Digital Culture

Digital development in typography can be divided into two areas, type form imaging and type form creation. 'Digital typography' was a term used by Charles Bigelow and Donald Day (1983) to describe type made up of discrete elements or any other graphic unit from which a letterform can be constructed that is displayed on cathode-ray tube (CRT), with the on-off pattern of the electron beam controlled by a digital computer. The proliferation of digital typography began with the introduction of the WYSIWYG (what you see is what you get) concept and direct manipulation graphical user interface pioneered by the Xerox Palo Alto Research Center (PARC) in the 1970s. The WYSIWYG concept allowed users to view documents corresponding to their actual size in print, especially on a Macintosh's 72 pixel-per-inch display and printer. According to Staples (2000), this close connection between an image and its output changed the way people thought about text when creating a document. For the first time, users were able to apply some typographic controls (basic though they may be) over their text documents. Users were able to specify different typefaces, sizes and styles to their document. In comparison, the world's leading computerized word-processing product at that time was WordStar, which had WYSIWYG feature but with limited typographic control.

The development of Apple's Laser Writer printer also vastly improved the quality of the final typographic output. Its 300 dot-per-inch capability allowed letters to be rendered smoothly and was able to handle subtle details of letters, for example in the rendering of delicate serifs, especially in smaller sizes. While the Laser Writer provided the hardware technology required for the development of desktop publishing (DTP), Adobe Systems' PostScript page description language supplied the equivalent software innovation. According to Kasdorf (2003, p.222), PostScript changed digital typography and imaging in several ways, namely it provided a convenient language in which to describe text and images in a device-independent manner. This meant that images and text could be displayed without any reference to the final output device. For example, as Cleveland (2003, p.125) explains, black and white proofs can be imaged on a 300dpi (dots per inch) LaserWriter but the final artwork can be imaged on a 2600 dpi Image Setter. Additionally, Adobe encouraged the expansion of digital typefaces by licensing high-quality typefaces from well-known foundries that used the PostScript language.

Parallel with the development in digital typographic layout, the creation of letterforms also underwent its own digital advancement. Research and development came from a wide range of type enthusiasts, ranging from computer scientists to professional type designers. It began in the late 70s and 80s at MIT and Stanford, where researchers and programmers started developing new ways to describe and display letters digitally (Staples, 2000). However, early attempts (by Phillippe Coueignoux in 1975, Pijush Ghosh and Charles Bigelow in 1983) to decompose the Roman alphabet into a set of basic elements that could be recombined to form a letter never caught on with the typographic profession. Similarly, Donald Knuth's METAFONT, which was based on algorithmic specification of geometrical relationships, was too inaccessible for typographers and designers to understand (Rubenstein, 1988). In 1974 Dr Peter Karow invented the revolutionary Ikarus type design program, allowing the conversion of hand-drawn letter outlines to digital outlines. For 15 years, this was the de-facto program for professional font production (Baines and Haslam, 2002) until it was finally replaced in the late 1980s by type design programs such as Letraset FontStudio and Altsys (later Macromedia) Fontographer. The introduction of these lower-cost and easier to use software programmes opened up the field of typeface design to 'outsiders' such as Zuzana Licko and Rudy VanderLans from Émigré[5]. Independent designers empowered by this new technology have created their own 'cottage industry' type foundries (Meggs, 1998), designing and distributing their own typefaces.

Up till the early 1990s, most of the innovations in digital typography concentrated on revising the image of the printed word (Staples, 2000). Digital typefaces at that time did not provide bitmaps that were designed for screen and often ended up looking rather coarse. However, this situation improved when Apple released their proprietary screen fonts such as Geneva and Chicago. In addition, designers such as Charles Bigelow, Kris Holmes (who created Lucida) and Matthew Carter (who was commissioned by Microsoft to create Verdana and Georgia) worked to create more typeface choices designed specifically for the screen. At this moment, the number of typefaces designed for screen usage is still relatively small in comparison with ones designed for print. However, with the introduction of the Tiresias PCfont (Gill et al., 2000a) designed for screen systems, Tiresias Screenfont (Gill et al., 2000b) designed for television subtitling and Microsoft's inclusion of six new screen fonts in their upcoming Vista Operating System (refer to Wagener, 2005), it seems that screen-based typography is finally being recognized as a distinct medium with its own special requirements.

[5] Émigré, Inc was founded in Northern California in 1984 and is a digital type foundry, publisher and distributor of graphic design related software and printed materials.

Digital innovations in desktop publishing and type design have democratized and decentralized a once very highly specialized and skilled craft of printing and punch cutting. Despite its drawbacks (for example, the proliferation of mediocre typefaces created by novices), the digital revolution has ushered in an era of individualization, flexibility and customization (Meggs, 1998). It has brought about many changes and introduced new challenges. The history of media transition has shown that in order to meet these challenges, a re-evaluation of our current approach, knowledge and application is required. Understanding the origins of typographic knowledge and how it has developed is the start of this re-evaluation process.

2.4 Historical Development of Typographic Knowledge

2.4.1 Practice-Based Knowledge

According to Nickols (2000), knowledge can be grouped into three distinct types: explicit, implicit and tacit. Explicit knowledge is knowledge that has been 'articulated and, more often than not, captured in the form of text, tables, diagrams, product specifications and so on'. Implicit knowledge is knowledge that is capable of being articulated but has not been. This type of knowledge can be inferred from observation or task analysis. In comparison, tacit knowledge is knowledge that cannot be articulated nor inferred from observation. For example, articulating how we operate a complicated machine or how we recognized a familiar face is not easily achievable. Tacit knowledge is normally associated with knowledge of doing, rather than knowledge of understanding. Michael Polanyi, a distinguished chemist and philosopher, was one of the first theorists to distinguish between explicit and tacit knowledge. Tacit knowledge is personal, context-specific, and therefore hard to formalize, while explicit knowledge is formalized and transmittable in systematic language. Polanyi believes human beings acquire knowledge by actively creating and constructing their knowledge. As Polanyi (1966, p.4) describes it 'we can know more than we can tell'. He argues that tacit knowledge is not only real and valid, but also forms the root of all other knowledge. Nonaka and Takeuchi (1995) expanded on Polanyi's idea in a more practical direction by describing tacit knowledge as based on its cognitive and technical elements. Cognitive elements refer to mental models, schemata, paradigms, beliefs and viewpoints while the technical elements refer to the know-how, crafts and skills. Practical disciplines like typography rely heavily on tacit knowledge derived from the practice of setting, arranging and designing type. As a result, past theorists have struggled to convert practice know-how into formal knowledge.

Typography has always been a 'technical' endeavour, and attempts to theorize it often result in a divorce from practice. Compared to more established fields such as Philosophy, History, Medicine and Science, typography is a young discipline, with a short history of systematic

research. Ravetz (1996) provides a recognizable description of an immature field like typography and offers useful advice for those engaged in research of such fields. According to him, research 'requires a certain degree of maturity of the field, and also elaborated social institutions, if is it to be effective' (1996, p.372). In order to understand the problems of 'immature fields', he derives guidance from the period before the rise of 'positive science' when there was a clear distinction between three types of inquiry: 'history', 'philosophy' and 'art'. 'History' meant description, not only of past events but also of any class of objects, while 'philosophy' meant reflection and explanation when applied to a problem. 'Art' in comparison referred not only to handicrafts, but extended to the development of practical skills to solve technical problems. Ravetz suggests that 'research' might be replaced by the less defined concept of 'history' and 'theory', by 'philosophy'. Using this paradigm, typographic philosophy may be viewed through typographic history and the critical exploration of artefacts (from the 'art' inquiry) from master typographers used as a basis for developing fundamental principles.

2.4.2 Models of Typographic Knowledge

Based on the discussion so far, it is not surprising that the majority of existing typographic writings are historical and technical rather than theoretical in nature. Early typographic writings are filled with advice on how to become a better typographer. In the early development of typography this advice was much sought after, as there was little in the way of formal training. Printers had to develop their own methods of punch cutting and printing. Joseph Moxon (1683) was considered to be the first typographer to describe the practice and tools of typography. Following that a French printer, Dominique Fertel, described in his 1732 text *La Science Pratique de l'Impreimerie* instructions on how to become a master printer, while another Frenchman, Pierre Simon Fournier (1712-68), endeavoured to set down 'correct' methods of punch cutting, founding and printing in Vol. I and Vol. II of his *Manuel Typographique* (Baudin, 1993). This trend of technical writing continues through to the 20th century, with works such as Herbert Spencer's *The Visible Word* (1968), Ruari McLean's *Manual of Typography* (1980) and Robert Bringhurst's *The Elements of Typographic Style* (1997) delivering a technical (and practical) model of 'good' practices in typographic application.

Other typographic related writings (Tschichold, 1928; Gill, 1936) tended to border on the ideological, as typographers attempted to impose their own standards of aesthetic value on the masses. Similarly other typographers such as Daniel Berkeley Updike (1937), Bruce Rogers (1943) and Stanley Morrison (1951) were concerned with the revival of beautiful and effective letterforms, emphasising artistry rather than technical skills. However, stripped of their aesthetic and philosophical dogmas, these works still served as a good basis for typographic principles.

Historical writings also formed a major part of typographic writings, for example, Herbert Spencer's *Pioneers of Modern Typography* (1969) and Nicollete Gray's *Nineteenth Century Ornamented Typefaces* (1976).

It is only in the last 20 years that there has been organized academic investigation into graphic design theory and history. As a result, works such as Johanna Drucker's *The Visible Word: Experimental Typography and Modern Art, 1909-1932* (1994) and Kinross's *Modern Typography: An Essay in Critical History* (1992) have begun to appear, providing much needed critical and theoretical discussion on the subject of typography. Along with these more theoretical investigations, legibility research has also come to the forefront of typographic studies.

2.4.3 Screen-Based Research

Research into screen-based typography has its roots in legibility studies. The first recorded attempt to test the legibility of text was conducted by Jean Anisson in the late 18th century (Kinross, 1992). However, it seemed that Javal (1878) is generally considered the first to apply a scientific method to legibility studies. This heralded the start of scientific research on typographic efficiency and legibility by researchers from various fields such as psychology, ergonomics and human computer interaction (HCI). Generally, these studies focused on the isolation and identification of design and medium variables (font, size, line length, screen size). For example, Donald Paterson and Miles Tinker conducted numerous studies between 1929 and 1963, experimenting with different typographic variables to find the optimum reading efficiency. It is interesting to note that even early researchers recognized that typography was not the only factor that contributed to 'reading hygiene'[6], considering other factors such as lighting, paper colour and reflectance level. With the introduction of electronic displays, researchers have started to focus on screen-based legibility by investigating the medium itself.

Until the early 1990s detailed research into the effects of reading due to typographic variables was not replicated for the screen, as noted by Dillon (1992) in his comprehensive review of empirical literature comparing reading on paper with screen documents. He finds that research specifically on screen reading was rather limited and often used concepts developed from print legibility research, such as the idea of 'skim' reading. Dyson (2004) offers a possible explanation for this lack of research – there have been suggestions and assumptions (Kahn and Lenk, 1993; Borchers et al., 1996) that we can translate our knowledge of designing for print to screen. However, Grabinger and Amedeo (1988) cautioned against this as the effectiveness of these methods for

[6] According to Waller (1996), 'reading hygiene' was a term used to describe the field of scientific studies of typography in the late 18th and early 19th century studies.

screen have not been established. Dyson (2004), in her research on how text layout affects reading on screen, supports this view and concludes that there are certainly issues that are particular to screen (such as scrolling and multiple navigation) and cannot be based on established print values. Researchers have recognized the need to establish a distinct field of screen-based reading research by either investigating specifically on medium specific issues (for example Chandler, 2001; Wiessenmiller, 1999) or by looking beyond narrowly defined typographic variables to help develop a better understanding of screen typography (O'Hara and Sellen, 1997; Dillon, 1994). Unsurprisingly, the starting point in early screen-based reading research was based on comparisons between print and screen. In a way, comparison with print is still prevalent in current typographic research and will continue to be so until screen-based typography establishes its own paradigm and new models of reference. For example an often cited, comprehensive effort to connect research to web design principles, 'Research-Based Web Design and Usability Guidelines'[7] (Koyani et al., 2003) presents almost 180 guidelines that were rated by eight academic experts on a five-point 'strength of evidence' scale. Disappointingly, out of the 180 guidelines, only eight have been assigned to the appearance of text. Moreover, more than two-thirds of the research cited as evidence for this category was based on print rather than screen-based research.

In contrast to formal and scientific legibility studies, researchers from the Massachusetts Institute of Technology (MIT) have taken a more creative approach to digital typography by experimenting with innovative and radical approaches to typography in a cyberspace environment. MIT's Visible Language Workshop, under the direction of Muriel Cooper, produced a three-dimensional information landscape incorporating type that could be zoomed, moved and had different levels of transparency (Staples, 2000; Lupton, 2000). This group 'embraced the collision of visual design and computer science and sought out how the combination would change the field of design' (Fry, 2004, p.48). Their work introduced the idea of mixing disciplines and their success has demonstrated the advantages of this approach.

Since Muriel Cooper's death in 1994, John Maeda's Aesthetic and Computational Group (also another of MIT's groups) continued this mix of design and computing themes by exploring the intersection between typography and programming. They experimented and researched into the 'algorithmic manipulation of type as word, symbol and forms' (Aesthetic and Computational Group, 1996). Maeda himself was trained as a computer scientist but later shifted his interest to graphic design. He has created a body of work that has expanded the 'concepts of the desktop

[7] This report was developed through a partnership between the National Cancer Institute (NCI) and the U.S. Department of Health and Human Services (HHS) is available from the www.usability.gov website.

metaphor and of conveying information in digital and paper media' (Paul, 2003, p.192). Many graduates of the group such as David Small, Benjamin Fry and Tom White have gone on to become influential figures in the interactive and new media discipline. Their research includes experimentation with dynamic visualization of text and narrative environments. This hybrid of designer/programmer/artist has been hailed as future innovators of graphic design (Staples, 2000, p.32). However, it remains to be seen how much of their approach and thinking reaches the majority of designers, who generally do not possess (nor would want to engage in) the high level of programming expertise required by this type of work.

2.4.4 The Nature of Design Guidelines

Quite often the communication and translation of practice-based knowledge is found through the usage of simple guidelines. Typography is no exception, as a number of typographic and design studies have been devoted to developing and presenting guidelines[8] for practitioners. While this may be considered the most direct communication of practical knowledge, it is not without its critics. Within the field of design and typography, Wright (1985) is particularly critical of simple guidelines that often over-generalize, causing more harm than good. She questions the number of guidelines required to cover the whole range of design issues. She cites Hartley's 'Fifty Guidelines for Improving Instructional Text' (1977), which was subsequently expanded into eighty rules (1981) as an example of this problem. Kinross's (1979) concerns are not so much the quantity of guidelines but their perceived value to the user. He criticizes guidelines that tend to favour ease of production and cost-benefit rather than the justification of benefit for the user. In the field of Human Computer Interaction (HCI), Burmester and Machate (2003) find that guidelines in this field often come across as difficult to understand, difficult to interpret and often too simplistic or too abstract, making them difficult to implement. Inflation of guidelines in the HCI field is much more acute than in the typographic field, as some examples chosen by Burmester and Machate demonstrate: Mosier and Smith (1986) – 944 HCI guidelines, Brown (1988) – 302 HCI guidelines and Mayhew (1992) – 288 HCI guidelines.

A constant criticism concerning the use of guidelines is that it will hinder innovative and creative ideas in the design process. On one hand, guidelines are helpful to novices if not taken to be inflexible rules (Hartley, 1982). On the other hand, if guidelines are treated as rigid laws, then the process of exploration during a design process will be severely hindered. Lee and Boling (1999)

[8] Stewart and Travis (2002) differentiate between three types of design guidelines: guidelines, standards and style guides. Guidelines can be seen as recommendations of good practice relying on the credibility of their authors. Standards in comparison are formal documents published by an accredited professional body that have been developed through some form of consensus or formal voting process. Finally, style guides are sets of recommendations developed from within an organization to increase consistency of design and promote good practice within its design process.

distinguish between two primary types of guidelines: expansive and restrictive. Their definitions refer specifically to their research regarding the increase of user motivation through the application of guidelines. Expansive guidelines are aimed at enhancing motivation in interactive multimedia instruction, while restrictive guidelines are aimed at preventing the loss of motivation. However, this distinction can also be applied to the field of typographic guidelines. Expansive guidelines in typography can refer to principles or heuristics, which describe basic aspects that are important when designing with text. The rationale behind each principle should be understood by the designer in order to apply them to his/her design. Examples and discussion of these principles can be found in Stanley Morrison's *First Principles of Typography* (1951), Emil Ruder's *Typography: A Manual of Design* (1967) and Jan Tschichold's *Form of the Book* (1991). Expansive guidelines require understanding and interpretation by the designer. By comparison, restrictive guidelines provide set practical rules relating to the application of typography within a specific context. Restrictive guidelines tend to appear frequently in corporate guidelines, where the style, size and colour of the typeface are usually restricted to conform to the corporate brand. However, in some instances, they can also refer to the general application of typography, such as Robert Bringhurst's recommendation in *The Elements of Typographic Style,* where he advises 'never begin a page with the last line of a multi-line paragraph' (1997, p.43), and 'avoid more than three consecutive hyphenated lines' (1997, p.31).

In order to avoid over-generalising and misuse of guidelines, several recommendations are offered. Burmester and Machate (2003) recommend that guidelines be treated as living documents, that should be continuously tested and revised. Waller argues that when 'guidelines are presented as the conclusions of a sound argument or well-documented case study, then they can indeed be useful and effective' (1988, p.86). Ben Shneiderman in his forward to the 'Research-Based Web Design and Usability Guidelines' report (Koyani et al., 2003), proposes to apply the four Es: education, enforcement, exemption and enhancement. He argues that designers must be motivated to think, discuss and debate about the guidelines. Guidelines should be verified through a transparent process which will demonstrate to the designer that they are sound. Designers will often produce work that will be beyond the descriptive boundaries of the guidelines. Design managers must balance enforcement with an exemption process that is simple and rapid. And finally, the last point of enhancement echoes Burmester and Machate's (2003) view on the need to continually revisit and renew the guidelines to account for technological and local user changes.

In summary, the word 'guidelines' literally describes what it should be used for; to 'guide', not to 'dictate' or 'direct'. Successful application of guidelines relies on the way the guidelines are

presented and the way they are subsequently interpreted by the designer. The author writing the guidelines must ensure that:

1. The aims of the guidelines are clearly stated.
2. The primary audience of the guidelines should be declared – for example, restrictive guidelines are better suited for novice designers, rather than more expert ones.
3. Qualifications, which state exception to the rules should be included.
4. There are illustrative examples showing varied application of the guidelines.

Meanwhile, the designer relying on the guidelines should:

1. Understand what kind of guidelines they are – expansive or restrictive. This will provide them with clues to the degree of freedom in interpretation when taking design decisions.
2. Be prepared to question, debate and even alter the guidelines based on their experience.
3. Treat guidelines as hypotheses, which are required to be proven during the evaluation phase. If proven flawed, they have to be revised. If proven sound, the guideline can be retained.

These recommendations have been taken into account in the development of this study, and are addressed in detail in Chapters 6, 8 and 9.

Discussions so far in this review have focused on the development of typographic knowledge through practice-based activity, influenced mainly by technological development. The manner in which typographic knowledge and skills have been taught has also changed over the years. What used to be a vocational, hands-on learning activity has become much more theoretical and classroom based. This reflects the general cultural shift from analog to digital environments and prompts a number of questions:

- Is this shift eroding the basic skills that are essential for a practice-based discipline like typography?
- How will educators address the growing gulf between traditional typographic skills and the opportunities offered by new media?
- How have different cultural traditions developed different educational models relevant to their industry needs?

The remit of this study will not allow sufficient investigation into these questions, however the next section will attempt to explore some of these questions by charting the development of the British model of typographic education in order to draw conclusions on its future path.

2.5 Development of Typographic Education

2.5.1 Graphic Design Education: A Historical Overview

Graphic design education has had few models to follow; such as the Bauhaus, Ulm, the Swiss School and more recently Post-modernism. There seems to be a wide range of approaches to design education, swinging from the more utopian, humanistic approaches of Bauhaus-inspired schools, to approaches that are more vocational, where craft and production skills are emphasized (Josephson, 1996). Design education can generally be divided into two camps (Friedman, 1997) which have emerged from differing attitudes towards design. One philosophy treats design as a skill in making an object or an artefact. This model (considered as a craft or vocational education) has been the historically dominant model used in design schools. The other philosophy 'treats design as a knowledge-intensive process that involves selecting goals, then developing and executing strategies to meet these goals' (Friedman, 1997, p.9). This model emphasizes the tools of science: analysis, logic, rhetoric and problem-solving tools. The dichotomy between these two approaches is consistent with the polarity in the functions of a designer. At one end, a designer acts like an artist, designing with aesthetic and product symbolism. At the other end, the designer has to be an engineer, creating a functioning object and taking into account production and cost factors.

According to Bird (2000), Art and Design education is the oldest form of publicly funded education in the United Kingdom. Both Bell (1963) and MacDonald (1970) traced its origin back to 1837, where 'artisan' education was created to support the United Kingdom's manufacturing industries. The Industrial Revolution had established the UK as a world leader in manufacturing technology, allowing British products to gain sizeable markets both at home and overseas. However, by the 1830s, European products were beginning to compete successfully with British products due to the superiority of their 'design' features. Recognising this weakness, a Select Committee was set up by Parliament to 'enquire into the best means of extending a knowledge of the Arts and the principles of Design among the people, especially the manufacturing population of the country' (1835-6 Select Committee title). They concluded that the UK government needed to support and fund design education. As a result £10,000 was budgeted to establish a Government School of Design in London.

Due to its emphasis on practice, early design education was closely linked to the historical training of the artisan and craftsperson. The connection between Art and Design was particularly evident in the United Kingdom, where design was considered to be the stepchild of Fine Arts. The Arts and Crafts movement greatly influenced the structure and emphasis of early design education in the UK. The movement brought a new reverence for fine craftsmanship after a

period of mass-produced, badly designed ornamental objects (Macdonald, 1970). Design was considered to be a crucial skill that could bring about this change in the quality and craftsmanship of the products. The members of the movement were against the principle of division of labour, either with or without the use of machines. Instead they were in favour of the master craftsman, creating all parts of an object, being involved from the design and assembly to the finishing of the object. This model was not new to the design discipline. Before the 20th century, and the industrial revolution's division of labour, early graphic design education's precedents were based on the European model of type founder and print shop apprentice (McCoy, 1998). Architectural schools were the only design education establishments to predate the 20th century, providing us with the 'atelier' or studio model of education where, in the studio environment, students emulated the masters and often acted like apprentices.

The Bauhaus is recognized by design historians to have been a revolutionary school model that had a major influence on design education. It marked the first real integration between art and design education with machine production, for while the Germans were enthusiastic about the Arts and Craft Movement they, like the Americans, were far too progressive and practical to indulge in the idealism of the artist-craftsman model. This is evident in the dominance of William Morris and Walter Crane, two artist-craftsmen in the early decades of the 20th century of British design education. In comparison, the initiative in Germany and Belgium came from architects/teachers like Walter Gropius, Adolf Loos and Peter Behrens (Macdonald, 1970).

The Bauhaus also practised the master/apprentice model, though it differed from the previous 'atelier' model of the Architecture schools by attempting to 'organize and codify the revolutionary ideas of the early twentieth-century "isms" and protomodern experiments into an educational method for the new industrial era' (McCoy, 1998, p.5). The Bauhaus Basic Course declared that there are basic design principles underlying all design disciplines, and that design education should begin with these abstract problems before moving into more discipline-based, practical problems such as audiences, scales and requirements. In short, it was more analytical, logical and thematic. The course attempted to integrate art and technology, synthesising the explicit (craft) with the tacit (art) (Wingler Hans et al., 1969). Whereas Morris desired a craftsman's culture, Gropius saw the mastery of craft as a means of preparation for designing in an industrial society. Gropius sought to integrate not just art, craft, architecture, industry and society but also the different arts disciplines.

After the Second World War the Bauhaus model became a major influence on design schools across Europe, Britain and the United States. However, the impact of the Bauhaus was more

closely felt in the United States as a result of political events. The closing of the Bauhaus in 1933 by the Nazi government resulted in the migration of many of its former teachers to the United States. These Bauhaus émigrés included Ludwig Mies van der Rohe, Laszlo Maholy-Nagy, Herbert Bayer, Walter Gropius and Josef Albers. As a result, many American design schools adopted the Bauhaus model, which required students of all disciplines to begin with the basic programme system. In contrast, Britain was slow to adopt the Bauhaus model and it was only in the 1950s that elements of the Bauhaus curriculum began to be taught in British Art and Design schools (Macdonald, 1970). Unfortunately, the Bauhaus's impact on American design programme was limited to the introductory art and design programmes (McCoy, 1998). Their idea of universal design principles, concepts and methods did not carry through to specific programmes such as Graphic Design. Instead, design schools tended to focus on simulating professional practice by continuing with the master/apprentice model. Students were encouraged to emulate the work of renowned designers, placing emphasis on their personal intuition and creativity. McCoy goes on to argue that this emphasis on the 'Big Idea' was a stumbling block to formalizing a design education method, and perpetuated the idea that success is limited to the level of brilliance in teacher and student.

The movement to 'scientise' design education was illustrated by the programmes offered at Hochshule für Gestaltung (HfG) at Ulm, Germany. It was opened in the 1950s, explicitly referring to the Bauhaus heritage. However, there were differences between the two, mainly in Ulm's emphasis of scientific rather than artistic content. As a result, the artistic dimension of the original Bauhaus curriculum was decreased and scientific content from the human and social sciences was increased and emphasized (Findeli, 2001). The Ulm model evolved to be replaced by the Swiss school. The 'Swiss school' of graphic design is often considered as the next phase of development in graphic design education (McCoy, 1998; Meggs, 1998) after the Ulm model. These Swiss innovators were descendants of the Bauhaus movement, representing a new phase of modernism. They 'applied the Bauhaus functionalist ethic to a systematic graphic method that shared the Bauhaus values of minimalism, universality, rationality, abstraction, and structural expressionism' (McCoy, 1998, p.6). The ideas and aesthetics of the Swiss school were mainly transmitted through the works of Josef Muller-Brockman, Emil Ruder, Karl Gerstner and Armin Hoffman. The Swiss style provided an objective and rational educational system that produced a codified method that was easy to communicate to students, providing them with basic principles to question and interrogate their own design process. In particular, the Basel School in Switzerland was to become a strong model for typographic education. Its emphasis on the prolonged study of abstract design and typographic form has become the underlying approach to typographic education.

The dominance of form over content in typographic education was only challenged when communication theories began to filter through in the late 1970s. The application of semiotic theory to visual communication problems was beginning to become popular in Europe and soon resulted in the development of more experimental and theory-based design approaches. During this period, it is widely acknowledged that stylistic pluralism and a proliferation of deconstructivist theories appeared to challenge the modernist tradition, freeing students to explore a wider stylistic range in their work (Votolato, 1998).

2.5.2 Models of Typographic Education

2.5.2.1 The Arts and Craft Model (1910-1940s)

The ancestor to formal typographic education was the printing class, established in the early 1900s in response to the growing industrial need for skilled printers. Ironically, the failure of the apprentice system within the guild system of the 1890s resulted in the introduction of printing into the British Art and Design curriculum. In 1905 evening classes in printing were started at the Central School of Arts and Crafts. John Henry Mason was appointed to teach these classes and thus became the first teacher of typography in an art school (Jury, 2001). The aims of both Mason and WR Lethaby (the Principal) were to lift the standards of the printing trade to that of the private presses, though this did not reflect the growing commercialism of the print industry, where a whole range of printed material (such as advertising, posters, leaflets, programmes and tickets) were being increasingly produced. Daytime classes were offered by 1909, and this was then formalized into the 'Day Technical School of Book Production'. Students (usually 16 years of age) spent three years at the school before becoming an apprentice for five years. Mason's approach to education was student-centred, focusing on the art and aesthetics of type. Surprisingly, criticism to this approach (often heard within a contemporary context) was that students lacked experience using modern technology, and their skills demonstrated an absence of realistic working methods. Mason, like his Arts and Crafts proponents, was trying to defend falling standards of workmanship caused by the mechanisation of the printing press. Unsurprisingly, as Jury (2001) suggests, Mason was not impressed by the developments in the Bauhaus, and probably agreed with Stanley Morrison when Morrison complained that the Bauhaus was; '...making an art out of something that should be a service, violating tradition, convention, orthodoxy'.

2.5.2.2 The Technical Model (1940-1960s)

Mason's distrust of Modernism was reflective of the national concern regarding the political events in Europe during the 1930s. It also suggests that, prior to 1945, typography in the UK was a highly conservative industry that saw no reason to reform (Jury, 2001, p.232-233). It was only

after the Second World War that the first reformation of type education was seen. The post-war boom required a proliferation of visual communication material. As a result, design education was restructured. Design for print was renamed Graphic Design, and was taught separately from the printing process. The 'art' of typography was now separated from the 'craft' of typography. Printing schools approached type using a scientific and technological point of view, while art schools (where the new graphic design programmes were offered) began to assimilate European design influences. Proponents of the modernist movement included Anthony Froshaug, who later joined the Hochshule für Gestaltung Ulm school as a professor of Graphic Design; and Herbert Spencer, whose book *Pioneers of Modern Typography* helped inform British post-war designers about new modernist ideas (Meggs, 1998).

2.5.2.3 The Specialist Model (1960s – 1980s)

In the UK the transition from the National Diploma in Design (NDD) to the new Diploma in Art and Design (DipAD) was meant to herald a broader, liberal and more visual education. Swann describes this model as one that,

> ...prescribed elements of history and theory to sprinkle some 'intellectual' content into what had been entirely a hands-on art/design practical course taught through the project system. 80% practical (studio) exercises in simulated industrial graphic design environments were complemented with 20% of lectures, seminars and the requirements to write essays and construct arguments through words, accounted for the award of the Bachelor of Arts. The only break-up of this overall course pattern has been the disruption of modularisation imperatives that have come with the economic and consumer-oriented rationalism of the late 1980s. (1997, unpaged)

This was an attempt to instil some form of 'academic' classes into the dominant vocational model that existed before. In a sense, it was only 'liberal' in name, as vocational studies still dominated.

The transition between NDD to DipAD coincided with the setting up of the Working Party on Typographic Teaching (WPTT) by the Society of Industrial Artists and Designers in 1966. It was set up following repeated criticism from assessors, teachers and spokesmen from industry regarding the poor quality of typographic skills in graphic design programme work. There was a call to bring back the composing room into type education as a way to reconnect the theory of type with the practice of the print room. The aim of the WPTT was to 'consider the place of typographic design in graphic design courses and to suggest means of improving quality of the teaching of the subject' (Twyman, 2001, p.237). In their 1968 interim report, the WPTT advocated a model of typographic education that rejected the use of typography as a form of

applied art and instead concentrated on the functional, technical, and economic factors of its brief. They recognized that design problems are different from those associated with the practice of art or craft and, as a result, require different forms of training from those associated with art and craft. They viewed the practice of typography as 'not only a matter of intuition or flair, but essentially a discipline and combination of skills and function capable of analysis' (Twyman, 2001, p.241). To meet the demands of these new challenges, they ambitiously proposed the introduction of related disciplines that had direct relevance to typographers and graphic designers: English, Mathematics, Management Studies, Psychology, Linguistics, Cybernetics, Technical Studies, and History of Design. While some subjects such as Cybernetics and Mathematics now seem outmoded due to technological development[9], WPTT's vision of a cross-discipline typographic education still has resonance with the current needs of typographic education, bringing a wider influence base to design. This was echoed by Weingart: 'certainly in the future, a study of typography must include a study of the meaning of text...we will need input for new fields such as sociology, communications theory, semantics, semiotics, computers and planning methods' (1972, p.16).

2.5.2.4 The Interdisciplinary Model

In recent years a broader-based, interdisciplinary and integrative approach to design education has been called for by design theorists and educators such as Buchanan (1995), Swanson (1998), Boyarski (1998) and Margolin (1990). Buchanan and Swanson in particular proposed a novel idea of teaching graphic design as a liberal art, rather than a graphic design programme with additional classes in liberal arts. Swanson refers back to the Aristotelian definition of liberal arts, which has four attributes: they are non-mechanical, they have an intrinsic value, they avoid specialization and lastly, they must be taken for their intrinsic value and not merely as vocational education. This approach calls for design to be seen as an 'integrative field that bridges many subjects that deal with communication, expression, interaction, and cognition' (Swanson, 1998, p.18).

Like Buchanan and the above mentioned authors, Swann (2001) suggests a new hybrid curriculum drawing from graphic design, communication and media studies. Swann states that 'an expressive/visually dominated graphic arts programme is not what the community needs for the 21st century' and goes on to argue that 'the emphasis must be on making reader-access to information as easy as possible, not making the form a vehicle for artistic "authoring"' (2001,

[9] Both these subjects were recommended on the basis of the current compositing and printing technology at the time. Mathematics was particularly useful for working out formulas and slide-rule calculations when preparing type specifications, while Cybernetics was considered important based on the typographic engineering that was connected to the computing and automatic data processing.

p.266-267). He is critical of the theoretical connections to Deconstruction theories popular during the mid 1990s, which intellectualize design output that seems only to satisfy a designer's self gratification[10]. Instead, he calls for the cohabitation of visual creativity and information science, reviving the old Bauhaus concept of Art and Technology as a way to confront technological changes.

Despite these calls for radical changes in typographic education, remarkably little has changed from the 1960s model of typographic instruction (Swann, 2001; Heller, 1995; Poyner, 1995). In addition, emphasis on typographic skills has been continually eroded due to increasing demand from other subjects, mainly due to the changes in inscription technologies, specifically recording and synthesizing technologies[11]. Additionally, the increasing dominance of image-based content over textual content in screen-based media (Kress, 2003; Manovich, 2001; Bolter, 1991; Ong, 1982) has meant that typographic skills are given less emphasis by design educators and students. While there has been no empirical study conducted into the decline of typographic studies, a review of current journalistic and critical articles relating to the subject has suggested that there is a decline in skills. Attempts have been made to address these concerns primarily by introducing specialist typographic programmes. For example, Reading University offers a degree in *Typography and Graphic Communication* and the University of Plymouth in Exeter offers a degree in *Graphic Communication with Typography.* However, the common route adopted by other universities is to allow for specialization in the subject of typography within a Graphic Design programme. Additionally, subject specialization is more common at post-graduate level than at under-graduate level. The model of subject specialization is generally a feature of Art and Design education where students progress from a level of general education (in their foundation year) to one of increasing specialization towards their final year of undergraduate studies. In contrast to other disciplines, design programmes tend to focus on practical rather than theoretical knowledge. Schön describes this as 'learning by doing and coaching' (1987, p.18). Theoretical development occupies a marginal space in undergraduate studies and tends to occur at postgraduate level.

There are split opinions regarding the future of typographic education. Some design educators oppose the specialization of typography within graphic design because this might suggest that typography is not a fundamental skill, while other design educators want to promote this

[10] See examples of work by the Cranbrook Art School in America and Tomato, a UK based design firm.
[11] According to Kress and Leeuwen (1996) recording technologies are those which automate analogical representations, for example audio recording, film and photography. Synthesizing technologies are those based on digital representations using a technological interface, for example the use of computer software and digital devices like the mouse and keyboard.

specialism to prevent further erosion of typographic skills within graphic design. This prompts the following questions:

- What role does typography have in other related programmes such as information design, interactive media or digital media?
- How would typographic education address new challenges posed by the requirements of these new disciplines?

Before we can speculate on possible solutions, perhaps it is better to first understand how human societies have adapted to technological changes historically.

2.6 Communication Media

2.6.1 Human Communication and Technology

The way in which communication is organized and presented through media and their related technologies affects how we communicate (cognitive, physical, vocal), which in turns affects what we communicate (language structure, new lexicons, new taxonomy). Leading communication theorist Marshall McLuhan posits that societies have always been shaped more by the nature of the media by which people communicate, than by the content of the communication (1967).

The history of communication in the western world can be seen to comprise of three major epochs: the transition from orality to literacy, from written text to printed text and from print to computer-generated content (Finkelstein and McCleery, 2002). Eisenstein (1979) presents a technologically deterministic view that the printing press was a key agent of social and cultural change during the Elizabethan age, promoting literacy and dissemination of knowledge. Socially, the age of the alphabet and print technology promoted the rise of individualism and linearity, while the arrival of the electronic age, which was prophesised by McLuhan (1967) as early as 1967, has encouraged unification and involvement. These three epochs are a result of the three major waves of technology leap as emphasized by leading technology and communication writers such as Nicholas Negroponte (1995) and Alvin Toffler (1971; 1980). According to Paschal Preston (2001, p.28), these third-wave theorists claim that the implications of new Information Communication Technology (ICT) 'are of the same order and significance as the agricultural revolution ten thousand years ago and the industrial revolution that first developed in Britain in the late eighteenth century'. Toffler describes the beginning of the third-wave as a period when 'the tide of industry peaked' in the decades after World War Two. 'The third-wave began when white collar and service workers outnumber blue-collar workers for the first time. It is also marked by the widespread introduction of computers, commercial jet travel, birth control pills and many other high impact innovations' (Toffler, 1980, p.24-30). He posits that traditional mass manufacturing factories are being replaced by their opposite: de-massification, customization and individualization (1983, p.14). These features have been further emphasized by the growth of the Internet. Recently, Kress (2003) suggests that the move to screen as the main medium of communication will result in a power shift, not only in the sphere of communication but also in other areas such as politics, economics, social and cultural contexts.

The transition between epochs has always been fraught with uncertainty and doubt. McLuhan (1967) explains that this is because we approach the new with the psychological and sensory conditioning of the old. He aptly notes that we tend to look at new technologies through a 'rear-view mirror' (1964, p.158) – interpreting new media using our existing experience with current

media. This strategy is often inappropriate and ineffective, as new media always tend to work and be applied in unexpected ways. Levinson (1997) illustrates this point by referring to how the radio was initially called the wireless, which was a true description but a misleading assumption that the radio would replace or even compete with the wired media of its day such as, the telephone and the telegraph. Instead, it carved out a whole new niche of communication using the simultaneous nature of radio to reach a wide geographical audience.

2.6.2 Understanding New Media

Lister et al (2003) suggest that in order to understand and study emerging media, an interest in the available histories of older media should be present. Understanding historical issues provides a stable base from which to explore the subject, and also help to discount any misleading history that has been imposed on new media. It is not surprising that a good deal of research and discussion in early new media studies has been concerned with discounting these 'histories', and suggesting alternate ways to understand the changes brought about by new media.

According to Lister et al (2003), different types of historical perspective on new media have been offered. For example, he highlights Rheingold's (1991) and Weibel's (1996) approach that uses teleological accounts to describe and explain the historical development of new media. This method refers to the idea that the development of new media is a result of a culmination of historical processes. There is an underlying assumption that any new technology represents a stage of development that was already present in other, earlier, media forms. In contrast, Mayer (1999) offers a historical outline of 'pivotal conceptual insights' (Lister et al., 2003, p.51-52) – using histories distinct from the history of computing and technology to introduce external factors that have played an essential but contingent part in the history of new media. For example, he draws on Leibniz's theory of reasoning logic in the development of binary logic. He uses examples from other philosophical, mathematical, mechanical and electronic achievements. These developments were not specifically directed to the development of the computer as we know it, but rather they reflect the general ambition of their time. As Mayer recognizes, it was only in the 1930s (when Alan Turing's concept of the 'universal machine' paved the way for symbol and number processing) that 'the right combination of concepts, technology and political will colluded to launch the construction of machines recognisable today as computers in the modern sense' (1999, p.9). He proposes that a set of technological and conceptual developments which occurred for a specific purpose have eventually come to influence and transform other areas, in this example, image and communication media.

While Mayer's view is a progression from the teleological account, it assumes that the computer will be the ultimate medium of communication, replacing all other forms of media. However, in reality, the computer is just one of the many other types of media available. Mayer's historical overview does not quite account for the multi-modal model of communication. It also becomes complicated with the convergence and interaction of old and new media. How do we envisage the relationship of the new and the old media over time, without assuming or using an overarching concept or schemas to describe both? According to Lister et al (2003), Foucault's concept of genealogy is the answer. It refers to historical affiliations (the attachments and connections between things) or resonance (the sympathetic vibrations between things), not origins.

2.6.3 Process of Remediation

When a new and significant visual technology is introduced to society, a process of reappropriation or, as Bolter and Gruisin (1999) term it, 'remediation' occurs. New media borrows and appropriates from previous media in order to make sense of itself. Bolter and Gruisin's theory of 'remediation' uses a Foucauldian historical perspective to argue against the 'comfortable modernist rhetoric' of authentic media 'essences' and 'breaks with the past' (Lister et al., 2003). They concur with McLuhan's viewpoint that 'the content of a medium is always another medium' (1999, p.45). Bolter and Gruisin argue that new technology does not really imitate reality, but rather another medium. In fact, they state 'this is all new technology could do, i.e. define itself in relationship with earlier technologies of representation' (1999, p.28). What new media forms tend to borrow is a sense of the real, to provide the user with a greater sense of immediacy. For example, photography attempted to provide a more realistic representation of reality compared to paintings. In turn, digital images strove to achieve photo-realism, as real as actual photographs.

Media theorist Steven Holtzman takes a different view from Bolter and Gruisin by suggesting that repurposing is a transitional step, paving the way for the development of new roles and techniques. In his view repurposing 'allows us to get a secure footing on unfamiliar terrain' (1997, p.15). Unlike Bolter and Gruisin, who argue that the process of remediation continues throughout the development of the media, Holtzman sees the repurposing phase ending when new media is able to exploit its own unique qualities. His viewpoint can be described as modernistic, aiming to break free from the old habits, experiment with the new (Lister et al., 2003) and 'define the essential properties of every medium' (Manovich, 2001, p.89). In contrast, Manovich describes this transition from analog to digital by focusing on how visual and media cultures of the last few centuries have played a role in the development of new media. He focuses

specifically on the theory and history of cinema in his argument that the historical development of the cinema is critical to the historical development of new media morphologies.

There are various levels of remediation. According to Bolter and Gruisin (1999), these range between the respectful and the radical. In the World Wide Web (WWW), an example of a 'respectful' remediation is the conversion of printed material into digital format. The Gutenberg project aims to digitize classic texts, adding very few design elements to the digital version. This is a straightforward conversion from analog to digital. Radical forms of WWW remediation are more common in newer types of media such as radio, television and telephone. Unlike straightforward prose, the introduction of these media in the WWW offers additional user control and delivers a much richer experience. In examples like the web cam, the WWW actually mimics the role of television by providing live feed of a certain environment. With the introduction of higher bandwidth and the development of wireless networks (reducing the cost of bringing broadband access to a large area), there will be an increasing remediation of moving images into the WWW.

Despite the more radical remediation of image-based media, it is rare to come across text-based content remediated to such an extent. Textual content remains difficult to transform and remediate due to its long-standing relationship with print. Content creators are probably more inclined to be respectful because textual media are more established and are unlikely to threaten the digital media (Bolter and Grusin, 1999). Economic and cultural forces also discourage further radical remediation of textual material. For example, museums and libraries may be reluctant to post their entire collection online, as they still require physical patrons and want to retain the exclusivity factor that open access cannot offer. In the same vein, publishing houses are unlikely to allow digitization and free access to their books (as Google is proposing to do[12]), even though it might result in higher exposure and sales in the long term. A secondary factor can be attributed to the affordances of the digital media and its suitability to the mode of the image. Kress (2003) argues that because digital media uses a single code for the representation of all information, irrespective of its initial modal realisation, it allows users the freedom to choose image over text. The digital world, according to Kress, prefers the image due to its immediacy and directness in communicating meaning. Unlike text, the interpretation of the image is immediate, flexible, natural and inherent in a person's individual construct. Hence the remediation of the image offers direct engagement, requires less decoding and, as a result, reaches a wider audience.

[12] See BBC news item (http://news.bbc.co.uk/1/hi/business/4358768.stm) for an ongoing discussion on the legality of Google's venture.

2.6.4 The Future of Writing

Landow (1997, p.30-32) in studying the work of Kernan (1987), Chartier (1987a; 1987b; 1989) and Eisenstein (1979) suggests three clear lessons for anyone trying to anticipate similar transitions from manuscript to print culture. They are:

1. Such transitions take a long time, certainly much longer than early studies of the shift from manuscript to print suggest (hundreds of years rather than decades).
2. The study of the relationship between technology and literature with other aspects of humanistic culture does not produce any mechanical reading of culture.
3. Transformation in the relationship between technologies, reading and culture has political context and political implications.

In addition, this study puts forward the viewpoint that any review of this kind should be approached with an evolutionary, rather than a revolutionary, framework. Frederick Kilgour's *Evolution of the Book* (1998), for example, adapts the 'punctuated equilibrium' evolutionary model of biologists Stephen Jay Gould and Niles Eldredge (1972) to explain the history of writing and printing from Sumerian times to the present. Kilgour parallels the history of the book with Gould and Eldrege's theory, in which long periods of stability in format alternate with periods of radical change.

Kress prophesizes that 'language-as-speech will remain the major mode of communication; while language-as-writing will increasingly be displaced by image in many domains of public communication, though writing will remain the preferred mode of the political and cultural elites' (2003, p.1). He views the screen medium as a natural arena for images in the same way that book and page are suited for writing. He argues that the increasing popularity of the screen medium has conditioned us towards more display-oriented communication and this has affected the way writing is perceived. The popularity of a display-oriented communication did not just develop due to technological determinism. Manovich explains how critics in the 1980s described one of the key effects of 'post modernism' as spatialization, and describes its attribute as 'privileging space over time, flattening historical time, refusing grand narratives' (2001, p.78). At the same time computer media, which evolved at around the same time, reflected this spatialization quite literally. Sequential storage was replaced with random-access storage, while cognitive movement present in cinema and literature was being replaced by physical movement through space, as in computer games like Myst and Doom. According to Kress (2003), the organization of writing is governed by the logic of speech, which in turn is governed by the logic of time. In contrast, the organization of image is governed by the logic of space. The logic of writing is linear/spatial while the logic of the image is spatial and simultaneous. As Manovich

(2001) suggested, digital media is much more suited to the logic of the image, where space and not time is emphasized. Kress (2003) suggests that screen is the dominant medium for text but, because the screen is organized by the logic of image, by default the logic of the image also orders the appearance of texts. Manovich declares that we are undoubtedly living in a society of the screen. As a result, discussions surrounding any form of writing are incomplete without taking into account the new logic of the screen.

The de-emphasis of text is not seen as a negative development by Kress (2003); on the contrary, he sees it as an opportunity to broaden how we view all types of text 'in which the texts of high culture could be brought into conjunction with the banal texts of the everyday' (p.120). Equally optimistic, hypertext theorists such as Bolter (2001), Nielson (1990), Landow (1992) and Lanham (1994) celebrate the characteristics of digitized information that freed text from a linear structure. They highlight the novel possibility of thinking in complex and multiple structures, allowing different entry and exit points to a text and facilitating different kinds of readings. George Landow, for example, says that 'present-day conceptual systems based on such notions as centre, margin, hierarchy, and linearity should be left behind and substituted by others such as multilinearity, nodes, links or networks' (1992, p.2).

In examining the new role of text in the digital media, one has to recognize its similarity to printed text, as well as the points where it diverges. As Manovich (2001) warns, it may be tempting to parallel early forms and practices of non-sequential text organization, for example the usage of footnotes. However, he argues that they are fundamentally different. Footnotes imply a master and slave relationship while hyperlinks in HTML have an equal, non-hierarchical relationship. Early hypertext theory[13] describes these differences explicitly. Generally, the differences can be described in contrast to the nature of printed material and are presented in Table 2.1 below.

[13] George Landow's *Hypertext: The Convergence of Technology and Contemporary Critical Theory*, Jay David Bolter's *The Writing Space*, and Myron Tuman's *Literacy Online: The Promise (and Peril) of Reading* and *Writing with Computers*, all appeared in 1992. These writers used literary theory to develop a coherent theory regarding hypertext. In the following year, two books emerged that examined the impact of hypertext and electronic publishing on literacy and education; Richard Lanham's *The Electronic Word: Technology, Democracy and the Arts* and Myron Tuman's *Word Perfect.*

Printed Text	Electronic Text
Printed work is stable	Electronic texts are infinitely malleable (or 'unstable'): they can be updated, reedited, or completely rewritten at any time by their creators
Printed work is fixed	Electronic texts lose their individual identities, merging together into vast networks of texts, presenting an integrated network of ideas and concepts.
Printed work is linear	Hypertexts can be connected to one another via hyperlinks, which allows multiples entry and exit points for the reader.

Table 2.1. Comparison between Print and Electronic Text

However, one must not overly exaggerate the differences between these two forms in an attempt to draw a clear distinction. Some of these new characteristics have existed in a recognisable form before the digital era. For example, Tapia (2003) and Aarseth (1997) argue that the idea of nonlinear experiences relating to text can be traced back as far as the *IChing*. The digital media did not invent a whole new way to read and present text, rather it obeyed pragmatic conditions relating to the reader. For example, printed text has been structured based on the form of its media, which is the codex. Pages are bound in a linear manner, but that did not prevent the existence of hypertextual organization, as footnotes demonstrated. Deconstructivist theorists such as Roland Barthes, Michele Foucalt, and Jacques Derrida would also argue that despite the image of reading as linear, fragments of text are often connected to different networks and a piece of text will often lie within a reference system of other books, text and phrases. For example Barthes, talking about literature in *S/Z*, highlights that,

> The unique text is not the (inductive) point of access to a model, but rather one entrance to a network with a thousand entrances. To take this entrance is to spy in the distance, not a legal structure with norms and deviations, a narrative, or poetic law, but rather a perspective (of fragments, of voices coming from other texts, from other codes. (Barthes, 1974, p.18)

2.7 Summary and Conclusions

This literature review can generally be seen to address two distinct themes. The first discusses the historical development of typographic knowledge (through practice and education), and how technological tools have been instrumental in shaping it. The second theme focuses on the development of new media technology, and attempts to present discussions surrounding the impact it has on future typographic education and practice.

The literature has not only shown that the inscription technology and its transmitting medium is crucial to the development of typographic knowledge, but has also demonstrated the need for a wider inclusion of external disciplines in the creation of a new framework for cross-media typography. The literature has examined the relationship between print and screen media, and suggested ways in which new visual language can be developed for cross-media typographic education and practice. Specifically, the literature review highlighted the concept of remediation, which focuses on the act of borrowing and refashioning existing knowledge in order to understand new media. The relevance and future of textual content was questioned in light of the current trend towards more image-based communication. The review supported the continued importance of textual content, although its level of remediation has so far been limited due to its strong affiliation with print, and a lack of a framework for current designers to appropriate their existing print-derived knowledge.

This literature review also emphasizes the lack of research conducted into the impact of new media development on typographic education and practice. Importantly, it has helped identify key opportunities for research based on:

1. The lack of an integrated framework to describe, organize and guide the future development of typography in a cross-media environment.
2. A limited vocabulary in the existing framework to understand, explain and teach screen-based typography.
3. The importance of external knowledge in informing the discipline of screen-based typography.
4. The insular nature of typographic education and practice.
5. The decline of typographic skills and knowledge in relation to screen-based usage.

This review has allowed the study to gain an understanding of the current framework of typographic knowledge, and has suggested ways in which this framework can be revised in relation to a design environment that is increasingly shifting from a single medium to cross-media. While there have been a variety of research projects conducted into micro issues relating

to screen-based typography (mainly legibility and usability issues), the literature search did not encounter any research attempting to draw together the knowledge of print and screen into an integrated framework. Thus, the development and creation of an integrated framework for cross-media typography is considered in bringing the typographic discipline into a corresponding relationship with current technological innovations.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

Description of the Research Design and Rationale

3.1 Introduction

This chapter outlines the methodological framework applied in this study. There are two main sections; the first section will discuss the context and rationale for the methodological approach, while the second section will describe the actual methods employed. In-depth descriptions of the different methods applied at each stage are located in their respective chapters.

Reviewing existing research methodologies enables an understanding of research approaches in relation to the subject of the research project, and identifies the ontological and epistemological roots of different methods. This section will open with a brief review of existing research methods before focusing specifically on design research methods. This study adopts a hybrid methodology from a number of different research traditions. It is therefore important to acknowledge the influence of historical as well as contemporary research methods. In turn, it is useful to trace how design research methods have been influenced by other major research traditions, and how they have evolved to develop more discipline-specific research methods.

Before we begin, it may prove useful to describe the context in which this study is situated. As mentioned at the beginning of Chapter 1, I am trained in the subject of Visual Communication design and have subsequently practised design for five years in commercial design studios before undertaking a research degree. Currently, I am continuing my practice as a design professional, and at the same time pursuing a research study that is connected to and drawn from practice-based concerns. As a result, professional design practice is very much the focus of this study. The importance of linking theory with practice and, in turn, using practice to generate theory in this study has resonance with the action research (Lewin, 1946; McNiff, 1988; McKernan, 1996) and reflective practice (Schön, 1983) approaches. As a result, I will review and discuss methods related to these approaches in detail (see Section 3.2.3).

3.2 Research Methodology

3.2.1 Review of General Research Methods

Archer (1995, p.6) defines research as a:

'...systematic enquiry whose goal is communicable knowledge...

- Systematic because it is pursued according to some plan;
- An enquiry because it seeks to find answers to questions;
- Goal-directed because the objects of the enquiry are posed by the task description;
- Knowledge-directed because the findings of the enquiry must go beyond providing mere information; and
- Communicable because the findings must be intelligible to, and located within, some framework of understanding for an appropriate audience.'

The nature of methods is that they are:

1. A way of proceeding or doing something, esp. a systematic or regular one.
2. An orderliness of thought action, etc.
3. Techniques or arrangement of work for a particular field or subject.

(Collins Concise English Dictionary, 1999)

According to Bernard (2000), research methods can be discussed at three levels. At the most general level, they represent epistemology, or the study of how we know things. Additionally, I would add that the discussion of epistemological questions must be linked with ontological questions. Ontology, according to Mason (2002), is concerned with exploring 'different versions of the nature and essence of social things'. She goes on to explain that 'epistemological questions will help generate knowledge and explanation about the ontological components of the social world...'(14-16). Bernard (2000) states that the second level of research methods refers to strategic choices, for example whether to conduct face-to-face interviews, search through an archive or run an experiment. He goes on to explain that research methods at the third level can be used to refer to specific techniques, for example deciding between different kinds of sampling techniques or deciding between semi-structured or unstructured interviews. Decisions at all three levels will undoubtedly influence the quality and significance of the outcome. Therefore a careful review of existing research methods at all levels is needed if any meaningful research is to be carried out.

Historically, there are two distinct ontological and epistemological approaches within research: scientific research and social research. Silverman (1993) distinguishes between these two schools

of thought by using the terms 'positivism' and 'interpretive social science'. Table 3.1 highlights this dichotomy:

Approach	Concept of Social Reality	Methods
Positivism	Social structure and facts to be discovered	Quantitative hypothesis testing
Interpretive social science	Social construction and meanings to emerge	Qualitative hypothesis generation

Table 3.1. Two Schools of Thought (adapted from Silverman, 1993)

Scientific approaches are often associated with 'positivism', which is a 'term often used to describe knowledge typically associated with the natural sciences' (Knight and Arksey, 1999, p.10). Its research strategies can be characterised as systematic, rigorous, controlled, deductive, predictive, positivistic, empirical and based on logical experimentation (Gray and Malins, 1993). Its central position is that experience is the foundation of knowledge (Bernard, 2000). Explanation of a phenomenon is central to its aim, and it holds that objective knowledge is out there to be discovered and can only be gained through direct experience of the data. It is largely based on quantitative data derived from the use of strict rules and procedures. Its purpose is to develop universal causal laws, and it aims to explain phenomena based on those laws (Robson, 2002).

Social science research is concerned with the 'sentient experience of being human and have in common an interest in human thought, life, culture and action' (Knight and Arksey, 1999, p.10). A social scientist's role is to understand and explain why people have different experiences, understanding the constructions and meanings placed upon experience. Social science research is largely based on qualitative data derived from observing *in situ*; that is, within a naturally occurring context. In contrast to quantitative data, qualitative data are often descriptive, inductive, meaning seeking, theory generating, consisting of multiple realities, socially constructed and context dependent (Ponterotto and Grieger, 1999). However, possessing outwardly 'non-scientific' characteristics does not suggest that a 'scientific attitude' cannot be applied to qualitative research. Being 'scientific' in this sense is to carry out research systematically, sceptically and ethically (Robson, 2002). If taken this way, all research should strive to have a scientific attitude for the purpose of uncovering new knowledge.

Apart from the traditional values of science such as detachment, neutrality, logic, generalizability, freedom from context, predictability and controllability, there is another approach that is becoming increasingly accepted within the academic community. Robson (2002) describes this

approach as 'relativist', while Reich (1994) uses the term 'practicism'. Capra (1983) terms this change as a 'paradigm shift' – a turning point in all aspects of our culture, characterised by a more holistic, systems-based approach. Mahoney (1990) supports the view that there are several ways to view 'reality', and describes the development of a different world-view as 'axial shifts'. Rudestam and Newton describe this shift as a turning point in history, 'away from a rational objectivism, which asserts that scientific knowledge is founded on objective empirical truths...towards the conception of a more relativistic universe and "poststructuralist" epistemologies' (Rudestram and Newton, 2001, p.24). This shift has brought scientific and social sciences research closer together, and presents a much more suitable base from which art and design methods can develop (Gray and Malins, 1993). It is these developments that I shall address next.

3.2.2 A Historical Development of Design Methods

3.2.2.1 The Scientific Approach

The development of design research has gone through a series of stages where different areas of the discipline have been studied and varieties of techniques adopted. For example, the study of design methods can be traced back to the 1960s, and grew out of a need to understand and describe the process of designing. At that time, the discipline lacked any body of knowledge to call its own, and design researchers continually had to borrow from other disciplines. A review of design methodology literature seems to indicate that there was no definitive approach to understanding design methods. Initially there was a desire to 'scientise' design and, according to Cross (2000), this can be traced back to the 20th century Modern Movement in design. There was an aspiration to produce works of art and design based on the objectivity and rationality that is characterised by the values of a scientific approach. Early design researchers relied on a strong 'positivistic' philosophy, in which they worked on the premise that there is an objectively correct method for designing, which could be described by theoretical models (Holness, 2000). Design problems were considered to be like any other problem-solving activity, leading to the assumption that they were fixed and stable. Consequently it was just a matter of uncovering the underlying law governing a design problem in order to generate the appropriate solution. Gregory (1966) sought to promote this 'design science' and gave a definition that 'design science is concerned with the study, investigation and accumulation of knowledge about the design process and its constituent operations' (1966, p.323). Design science aims to collect, organize and improve those aspects of thought and information concerning design which are likely to be of value to practical designers and design organizations. The term 'science of design' was also introduced when Herbert Simon outlined his view of developing a 'science of design' in the

universities; that is, a 'body of intellectually tough, analytic, partly formalisable, partly empirical, teachable doctrine about the design process' (Simon, 1969, p.58).

This 'scientific method' was reflected in design research conducted throughout the 1960s to 70s. Typography as a topic of design research was no exception. The earliest research in the subject of typography was conducted to investigate the reading speed and pattern created by different text layout and choice of typefaces. Extensive empirical research had been conducted into the legibility of print, starting from as early as 1878 with Javal, to more recent research such as Tinker (1968; 1963), Zachrisson (1965) and Bouma (1970). Waller (1988, p.71) comments that early researchers 'distance themselves from designers through an exaggerated respect for their "artistic", "intuitive" or "aesthetic" judgment, which is seen as entirely closed to the scientific method'. In most cases, researchers conducting this work were educational and cognitive psychologists rather than practitioners with knowledge of typography. This approach resulted in a criticism that was made of early legibility research; that the studies lacked internal validity due to the inappropriate choice of typographic material (Lund, 1999 cited by Dyson, 2004). Dyson (1994) goes on to argue that if research was conducted in close collaboration with someone who had typographic knowledge, the outcomes were much more effective. In short, early research conducted in typography was mostly scientific-based and conducted by researchers outside of the typographic and design discipline.

3.2.2.2 A Paradigm Shift

Despite the use of positivistic methods and philosophy in early design research, there was a growing acknowledgement that scientific methods have their limitations in the study of design. In particular, their over-emphasis on the rational objective dimension without recourse to more human issues such as the intuitive, creative and value-based aspect of designing (Coyne and Snodgrass, 1993; Dilnot, 1982). Popper (1959), for example, argued that scientific theories (or conjectures), far from representing certainties, are actually characterized by the possibility of refutation. Kuhn (1962) described how 'paradigms' shape understanding and creativity of the world and consequently shape the theories and concepts that emerge from it, while Feyerabend (1975) argued that science is only one tradition amongst many, and scientific rationality may not be the best model to interpret the world. Design researchers were beginning to question the philosophical foundations on which design methods had developed (Daley, 1982; Broadbent, 1979; Hillier et al., 1972). Just as the scientific community has moved closer to the more 'relativistic' way of viewing and approaching their research in recent times, design researchers were also drawing parallels between this paradigm shift and the developments in design research.

Donald Schön in particular contests this positivistic approach by arguing that design functions in situations of uncertainty, uniqueness, and conflict which makes it difficult to approach in a scientific manner. He challenges Simon's (1969) view that designing is based on well-formed problems, arguing instead that professional design practice has to deal with uncertain, ill-defined, complex, and incoherent problems (Schön, 1987). Instead, he proposes to search for 'an epistemology of practice implicit in the artistic, intuitive processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict' (1983, p.49). This process is what he terms reflective practice. Schön was not the only one who opposed the positivistic approach as Archer, for example, argues that, '...there exists a designerly way of thinking that is both different from scientific and scholarly methods of thinking and communicating, and as powerful as scientific and scholarly methods of enquiry, when applied to its own kind of problems' (1979, p.348).

3.2.2.3 Development of a Distinct Discipline

The view that design should be acknowledged as its own discipline, separate from scientific research, does not suggest a complete abandonment of scientific enquiry in design research. Instead, these views suggest that the field requires a wider use of methods and approaches outside of the positivistic model. Cross (2000) calls for a balanced approach to the development of a design discipline, on the one hand recognising that design has its own appropriate culture but on the other hand not completely disregarding other cultures. For example, Love (2000) refers to recent developments in systems theory as a way to predict the future development of design theory. He believes that there are enough shared similarities between design and systems theory to pursue this notion (Love cites Holt et al., 1985; Love, 1995) and goes on to argue for the development of a meta-theoretical basis for design theory based on the recent development in systems disciplines[1]. In contrast, Gray and Malins (1993) put forward a new group of developing methodologies for Art and Design disciplines that is purposely separate from both the science and social science methodologies. They argue that whilst many tenets of scientific research have their equivalent in design research, the practice and process of art and design is different enough to warrant the development of research methodologies appropriate to its own nature.

Currently, design methodology, as Cross (1984) terms it, is 'coming of age'. It is no longer trying to follow processes of scientific or social science research but now endeavours to be natural to the act of design (Archer, 1979). Contemporary design research is increasingly focused on the

[1] These developments echoed design research's move away from a positivistic perspective, where system researchers have 'looked to post-positivist and constructivist approaches as providing more appropriate foundations for systems theory because the earlier focus on positivism had led to problems of philosophical justification, lack of theoretical integrity and poor practical applicability' (Love, 2000, p.47).

practice of design, with design itself regarded as valuable and essential research. This shift has resulted from the need to address human issues and values, which are difficult to verify in a positivistic sense. Olaisen and Friedman (2000) describe two categories of design research; one involving pragmatic research or applied research focused on objects, the other focusing on the social aspects of design, including design management, economics, product semiotics and design history. In this context, Mitchell suggests that the future of design research lies in formulating design methods that are user, rather than object, centred. The focus should be the development of a process-orientated design task grounded in the 'dynamic experience of users, not on product design per se' (1993, p.62).

3.2.2.4 Practice-based Research

Allison (1992) outlines seven principle procedures in relation to Art and Design research as follows:

- Historical
- Philosophical (theoretical)
- Experimental (pre-, post-testing, 'control')
- Comparative (cross-cultural)
- Descriptive (using surveys, causal-comparative methods)
- Naturalistic (interpretive, phenomenological, qualitative enquiry)
- Practical (creative, expressive / productive)

As Davies Cooper (1995) acknowledged, most research rarely falls neatly into one category and often design research uses a combination of procedures adopted from the sciences and social sciences. The first four could be termed as 'classic' research methodologies, having gained acceptance in the research community (Gray and Malins, 1993). In comparison, the last three can be considered to be less 'scientific' and more relevant to a real-world model of practice. A survey of past and current research conducted on the subject of typography revealed that a majority of research focuses mostly on the experimental (legibility of type on print and screen), historical (biography of typographers and printers, development of printing techniques, development of typefaces) and philosophical (discussions surrounding the role and purpose of typographer and typography). It is still rare to encounter typographic research conducted in close relation to practice. One exception is Catherine Dixon's (2001) practice-led PhD thesis on developing a descriptive framework for typeface classifications. She describes her enquiry as 'both practice-led (initiated in design practice) and practice-based (carried out through design practice)' (Dixon, 2005). She uses design as a 'reflective conversation' and treats the design process of her framework as equivalent to a research process.

In comparison, this study uses a combination of descriptive, naturalistic and practical procedures. The research questions of this study are derived from practice-based concerns, hence the premise that it is practice-led rather than researcher-led. Frayling (1993) (adapting Herbert Read's ideas on art education) classified three types of research involving the study of art and design:

1. Research INTO practice
2. Research THROUGH practice
3. Research FOR THE PURPOSE of practice

Research into practice refers to research where art or design practice (in this case, design practice) is the object of the study. Research through practice refers to research where art or design practice is the vehicle of the research and a means to communicate the result. And finally, research for the purpose of practice aims to communicate the research embodied in a piece of design. This study started out as inherently practice-led, involving research and deriving theory *through* design practice. As a result, action research was identified as the most appropriate method for this manner of research.

The initial objective of this study was to conduct research through the medium of practice, in this study's context relating to professional design practice rather than educational practice. However as the study developed and a clearer theoretical framework emerged, it was evident that the study would be unable to address problems within the professional design practice without first addressing fundamental issues within the educational practice. This resulted in a refocusing of research activity towards the educational environment. This had a noticeable impact on the study, in terms of emphasis, methods and outcome. Design education was my secondary rather than primary area of practice and as a result raised the question of how much of the study would be 'practice-led'? Although this study has shifted from a design to an educational focus, it is still inherently derived from *a type of practice*, in this case a practice that I, the researcher, had only part-time involvement in. Consequently, the study uses Greenwood and Levin's model of *co-generative research* via *co-generative learning* in which the action researcher as the 'friendly outsider' tries to bridge the 'world of scientifically constructed knowledge' of the outsider with the 'world of practical reasoning' vis-à-vis the 'local knowledge' of the insider (1998, p.113).

Both professional design and educational practices have similar limitations when used as action research subjects. In an educational environment, I was limited in the kinds of projects that I could conduct as well as the amount of time I could spend with students. Access to the students was dependent on the educational organization, the consent of its tutors and the availability and accessibility of learning resources. In comparison, carrying out action research projects within my

own professional practice was more straightforward and only involved negotiation with my design management (which already supported this study from the beginning). However, the main disadvantage of basing the project on professional practice is that the range of design projects that can be studied is entirely reliant on the types of live project operating during the research period. This is symptomatic of any research conducted through the medium of practice, which is often unpredictable and vulnerable to uncontrollable factors (for example the availability of suitable projects, the whim of clients, the type and focus of projects and budgetary constraints). In addition, conducting research during the act of designing or teaching (for example reflective practice) is often difficult and obstructive to the respective activity. In carrying out this study it has been found that the experience of conducting design research in an educational environment has been invaluable to addressing this research's aims, and its modification from the original research emphasis is representative of the iterative and reflective process of action research. The decision to focus on an educational environment was not made because it is easier to derive research outcomes, but because the supervisory team and the Mid-Point review panel of the study concluded that the research could not develop a framework for practice without first addressing educational issues.

3.2.3 Bridging Theory and Practice – Action Research

The proposed data collection methodology for this study is a combination of descriptive (questionnaire), naturalistic (interview) and practical (action research project) procedures (Allison, 1992). However, its dominant approach drew primarily on action research principles, especially in the manner in which the Typographic Framework was developed as an iterative, reflective process.

3.2.3.1 What is Action Research?

Action research began as a process of improving a perceived social problem. The term was first used and popularised by Kurt Lewin (1946), a social psychologist working to improve social, economic and industrial conditions. He was interested in social change, specifically in how to conceptualize and promote social change. He envisaged this process happening in three stages; first to unfreeze former structures, secondly to change those structure and finally to freeze them back into an improved structure (Greenwood and Levin, 1998). This type of action research promotes the idea of researcher intervention in the community and encourages the community that is being studied to investigate their social condition, recognize constraints and eventually work towards removing them. Since the 'birth' of action research, many others have attempted to define and interpret its use. Perhaps the most accepted working definition according to McNiff is one offered by Stephen Kemmis and Will Carr:

> Action research is a form of self-reflective enquiry undertaken by participants (teachers, students or principals, for example) in social (including educational) situations in order to improve the rationality and justice of (a) their own social or educational practices, (b) their understanding of these practices, and (c) the situations (and institutions) in which these practices are carried out. (1986, p.162)

Rapoport's definition emphasises the value of action research in the practical concern of problem solving, without compromising the theoretical development from a social science perspective:

> Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework. (1970, p.499)

Kurt Lewin developed a model, later improved on by Kemmis, Elliot and Ebbutt, involving a cyclical series of planning, acting, observing and reflecting. The first cycle may result in a revised and improved plan of action, which then leads into the second cycle (Kemmis and McTaggart, 1988). In each cycle, there is an emphasis on action and critical reflection of the process and outcomes. Lewin's model was designed to assist practitioners in describing their professional development in a social situation, which would ultimately provide them with an explanation for their practice.

3.2.3.2 Use of Action Research

According to McKernan, the aim of action research is to 'solve the immediate and pressing day-to-day problems of practitioners' (1996, p.3). He stresses that this is the main difference between action research and scientific research. Action research is also used to facilitate professional understanding, personal growth and political empowerment (Noffke, 1997). Action research is suited to research that is data-driven, rather than theory-driven. Theory-driven research allows existing literature and knowledge to generate the research's theory, and the research is a process of extending, refining or challenging existing knowledge. In data-driven research, research questions are developed from studying the existing research situation and being responsive to it (Dick, 2002)[2]. In addition, action research allows for theory generation, intervention and theory testing to co-exist in an iterative loop (Checkland, 1991).

[2] This is also true of the grounded theory method (Glaser, 1992); however the main difference is that the 'action' is not the main emphasis, as it is in action research.

3.2.3.3 Action Research and the Reflective Practitioner

Action research has proved particularly attractive to the practitioner due to 'its practical, problem-solving emphasis, because practitioners carry out the research and because the research is directed towards greater understanding and improvement of practice over a period of time' (Bell, 1993, p.8). The practical and problem-solving nature of action research makes it an appropriate and accepted method for a practitioner-researcher to investigate and improve their work and working environment. It allows practitioners to objectify the process of intervention and make changes for the purpose of improvement.

A unifying theme of the different types of action research is that all action research is a form of *reflective enquiry,* governed by rigorous principles or canons of procedure (McKernan, 1996). Reflective enquiry within a practice-based environment has been influenced by Schön's theory of reflective practice (1983). Schön's description of reflective practice is particularly attractive to designers because it was learned for, and through, designing (Frayling, 1993). In contrast, design research methods have so far been developed from studies removed from the design studios of practising designers. Tonkinwise explains why Schön's account of design resonates with designers. It bridges the worlds of university and practice by 'finding research practices and learning tactics at the core of designing itself, avoiding the need for designers to borrow methodologies and pedagogies from other academic fields' (2004, p.223). In a professional practice, Schön argues that a practitioner's knowledge is tacit and implicit in his/her patterns of action. He describes this as 'knowing-in-action'. The process of carrying out a course of acting, intervening, observing changes and reflecting on their effect, is described as 'reflection-in-action'. This process allows practitioners to make explicit their implicit knowledge. According to Schön, the process of reflection-in-action is central to the manner by which practitioners deal with situations of uncertainty, instability, uniqueness, and value conflict. These types of situation are often reflective of the 'swampy lowlands' problems encountered by designers in their practice (Schön, 1987, p.3). This is comparable to Rittel and Weber's (1984) description of 'tame' and 'wicked' problems. It is not surprising that Schön uses the creative practice of Architecture to describe and demonstrate his 'reflection-in-action' model.

Despite a seemingly perfect fit, the design practitioner / researcher should be careful not to become overly enamoured by reflective practice. One criticism is that reflective practice can become self-reflexive (reflective practice = designing = learning = reflective practice). Tonkinwise (2004) argues that if reflective practice is itself a model of a kind of designing, and designing is not just how you design but how you learn, then how can a designer reflect on knowledge that he/she is not aware of in the first place? Schön attempts to confront this problem of unresolved

reflexivity by suggesting that the reflective practitioner use progressive levels of reflection. They are, in reverse order:

4 – Reflection on reflection on description of designing

3 – Reflection on description of designing

2 – Description of designing

1 – Designing (1987, p.115)

The first level is reflection-in-action during the act of designing (note this is different from just the act of designing without the conscious effort to reflect). The second level expects the designer to describe their actions in meaningful ways. The third questions the meaning or appropriateness of those descriptions. And lastly, the designer should be able to devise suitable responses to those questions.

3.2.3.4 Action Research Models

Just as many types of definition and description have been developed, so too have many types of action research methods and approaches. Melrose (2001) provides a succinct summary of its major categories. According to her, action research can be based on:

1. Educational theories about action learning (Revans, 1982; 1991; McTaggart, 1997; Zuber-Skerritt, 1992)
2. Praxis (Schwab, 1969; Webb, 1996; Zuber-Skerritt, 1992)
3. Experiential learning (Kolb, 1984; Zuber-Skerritt, 1992)
4. Personal construct theory (Kelly, 1995; Zuber-Skerritt, 1992)
5. Critical education (Carr and Kemmis, 1986; Webb, 1996; Zuber-Skerritt, 1992)
6. Action science (Argyris et al., 1985; McTaggart, 1997)
7. Reflection (Schön, 1983; 1987)
8. Reflexivity (Hall, 1996; Winter, 1996)
9. Soft systems methodology (Checkland, 1995)

Carr and Kemmis (1986) distinguish between three types of action research – technical, practical and emancipatory. These divisions can be differentiated by the research focus and intention as well as the role of the researcher. Technical action research aims to improve practitioner effectiveness and skills through a method of problem definition at the outset. It seeks to solve these problems through experiences and observations and often relies on experimentation (Grundy, 1987). McKernan (1996) terms this a scientific-technical view of problem solving. Practical action research aims to build a group understanding of the practice and seeks it through interaction and group meaning-making. According to McKernan, the practical model 'trades off

some measurement and control for human interpretation, interactive communication, deliberation, negotiation and detailed description' (1996, p.20). The emancipatory approach aims at a critical response to organizational constraints, where the researcher acts as a moderator to facilitate change and bring about empowerment.

Choosing which action research method to pursue is determined by the research purpose and interest of the researcher. Different methods will be chosen, reflecting different types of questions. Rearick and Feldman (1999) give an educational example of how questions can differ depending on the model chosen:

1. Technical – 'What means shall I use to get my students to talk or write about what they read?'
2. Practical – 'What assumptions or predispositions underlie the teaching activity?'
3. Emancipatory – 'Which educational goals, activities, and experiences contribute to humane, just, equitable, fulfilling life for the students?'

Rearick and Feldman (1999) also describe different types of reflection that take place within action research. They are:

1. Autobiographical
2. Collaborative
3. Communal

In instances of autobiographical reflection, the researcher is the main focus of the research. The purpose of this reflection is to examine the meaning of his or her actions, and to probe their meaning in relation to the working environment. Collaborative reflection involves reflecting on a social construction of the self and the system. It seeks answers outside of the personal subjective experience. Communal reflection seeks interaction with others in a larger context, such as cultural, historical and institutional. It seeks to uncover wider communal meanings developed through public dialogue and debate.

This study situates itself within the technical and collaborative models. It is concerned with a perceived practitioner problem (in this case my inability to reconcile my print-derived typographic knowledge with my current practice in screen-based media) and seeks to investigate possible solutions through a reflective practice process (Schön, 1983) involving the individual and her design practice environment.

3.2.3.5 Action Research Methods

Greenwood and Lewin (1998) state that all action research projects must contain three basic elements: research, action and participation. However, Dick (2002) suggests that not all action research must be participatory. Instead, he proposes to treat action research as a 'family of research methodologies that pursue the dual outcomes of action and research'.

As Melrose (2001) points out, although action research has sometimes been treated as a method of qualitative research in the social sciences and education, both qualitative and quantitative data may contribute to the cycles. This mixed method reflects the manner in which this PhD research has been designed and conducted. Greenwood and Lewin concur with this view and reject the notion that action-oriented work cannot be scientific. Action researchers may use a wide variety of methods, ranging from 'surveys, statistical analyses, interviews, focus groups, ethnographies and life histories' (1998, p.7) as long as the reason for using them has been agreed on by the action research collaborators and does not oppress the participants.

The advantage of using an action research method is that it permits a wide variety of reactive and non-reactive research methods and techniques (McKernan, 1996). This flexibility supports this research study well as it seeks to iteratively develop, evaluate and refine the Typographic Framework during the key stages of the research.

3.2.3.6 Rigour in Action Research

Rigour in research is often referred to when the methods used are those that can represent the fullest, most detailed, rich and expressive picture of a particular situation. It relates to thoroughness, attention to detail and consistency with the research strategy. Action research is sometimes dismissed as not being 'proper' research by researchers whose research paradigm values quantification, precise research questions and generalisation. The scientific notion of rigour is often associated with internal validity, external validity and construct validity (Melrose, 2001). Internal validity refers to whether the change/improvement is a result of a reflection or action, while external validity refers to whether the outcomes can be generalized to other communities. Construct validity refers to the suitability of the research methods for the research purpose and paradigm. McTaggart (1997) argues that the emphasis on generalizability is an unsuitable model for action research. Instead he proposes that the evaluation of rigour in action research should be based on the criteria of defensibility, educative value, political efficacy and moral appropriateness.

Coghland and Brannick (2001) argue that demonstrating rigour is particularly important in action research due to its less-defined research questions, methods and outcomes in the initial first cycles. As the project develops and the cycles are repeated, these aspects will become clearer. Therefore it is important to demonstrate that the research has achieved rigour at every stage. As Dick (1993) emphasises, this means that the research must show:

- Use of action research learning cycles
- How multiple data sources were accessed to provide contradictory and confirming interpretations
- Evidence that the research assumptions and interpretations have been continuously challenged throughout the project
- Evidence that the interpretations and outcomes have been challenged, supported or disconfirmed by existing literature

Branigan (2003) sums up the most appropriate way to achieve rigour in action research, is through careful selection and use of multiple methods (triangulation), the practice of reflection and self-examination during the iterative learning cycles, and validation from different participants involved in the research.

3.3 Research Design

Research design is a plan of action indicating the specific steps that are necessary to provide answers to the research question (Wrenn, 2002). Robson succinctly writes that a research design 'is concerned with turning research questions into projects' (2002, p.79). The choice of research strategy is very much dependent on the type of research question the study is trying to answer (Manstead and Semin, 1988).

According to Robson (2002), there are three main types of research design strategies employed in social research: fixed, flexible and multiple. A fixed design strategy calls for a tight pre-specification before the main data collection stage. Data are mostly in the form of numbers and are collected using quantitative methods. A flexible design strategy evolves during data collection. Data is typically non-numerical (words) and usually collected using qualitative methods. A multiple design strategy in turn incorporates both fixed and flexible design elements. This research adopts a multiple design strategy, where it uses a mixture of quantitative and qualitative methods at different stages of the study. Mixed or hybrid studies are described as 'products of the pragmatist paradigm and that combine the qualitative and quantitative approaches within difference phases of the research process' (Tashakkori et al., 1998, p.19).

The research design is divided into three stages (refer to Figure 3.1). They are:

- Stage One: Definition of research questions
- Stage Two: Typographic framework development
- Stage Three: Typographic framework evaluation and refinement

Generally, qualitative methods were applied in all stages. One quantitative study was conducted at the start of Stage 2, in the form of a questionnaire survey. However the overall strategy applied throughout the research design was action research. Throughout the study, theory development was conducted in an iterative manner, where theory generation, intervention and testing (Checkland, 1991) were occurring during all three key stages. However, it is in Stage 3 where action research methods were applied directly for the student projects. This stage closely follows Lewin's 1946 spiral model for action research method (later refined by Kemmis, Elliot and Ebbutt), which consists of four steps: planning, acting, observing and reflecting.

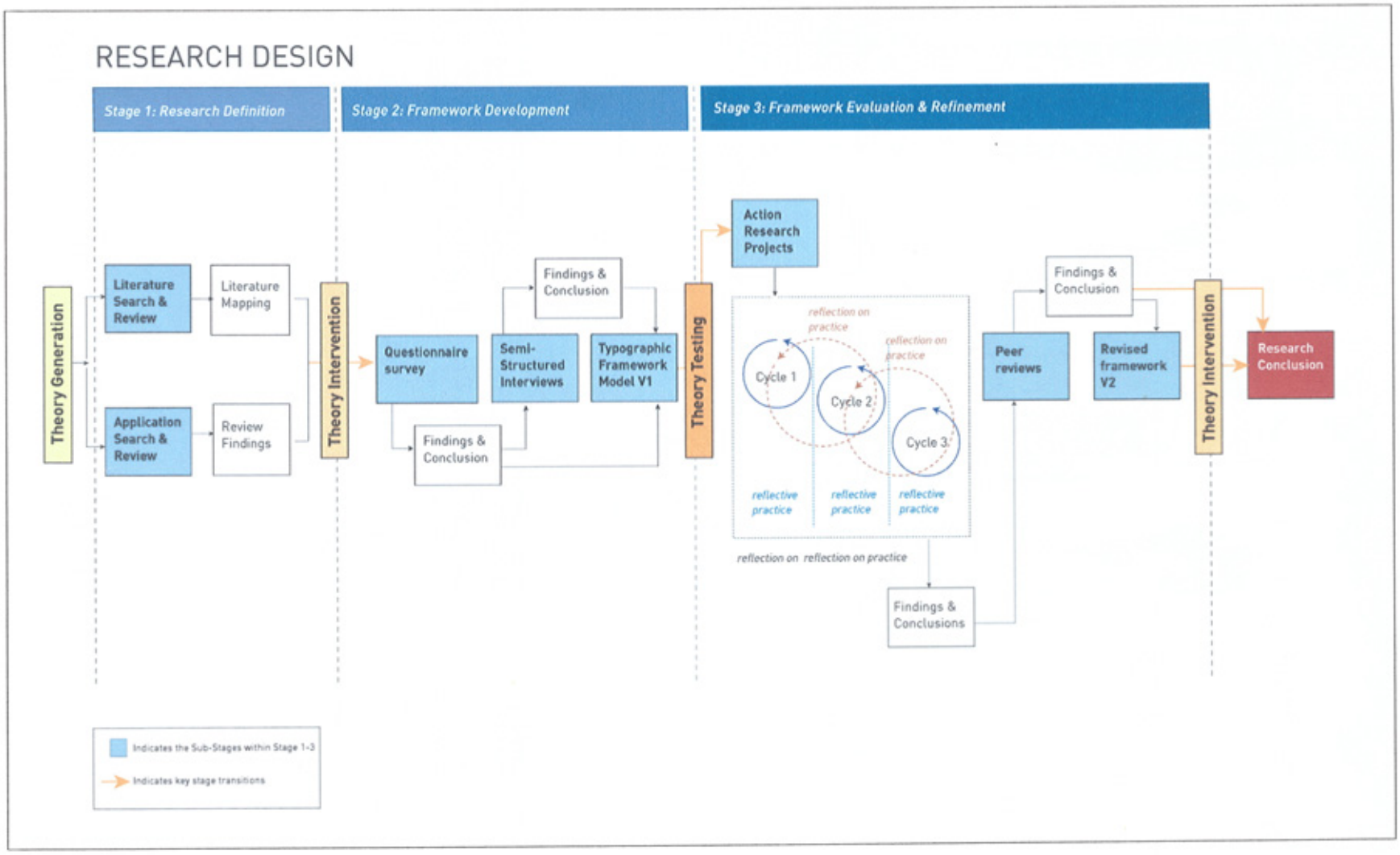


Figure 3.1. Research Design Diagram

3.3.1 Stage One: Definition of Research Questions

The first stage of the study involves definition of the research questions and investigation of the purpose, theory and methods of this study. It consists of two phases: literature review and design application review.

3.3.1.1 Literature Review and Mapping

A wide range of literature was searched and reviewed in two main areas: visual communication and new media. Initial searches revealed modest research conducted in the area of screen-based typography. Most literature was focused on giving practical advice rather than conducting a full-scale theoretical review of the current needs and application of typography in screen-based media. Subsequent searches outside the main subject areas were required and provided much better search results.

As a result of this exercise, a map of primary and secondary literature was developed and later presented as a paper in the 5th European Academy of Design held at Barcelona in April 2003[3]. The first part of the paper describes the development process of the literature map and its value in relation to the research enquiry. The second part provides instructions to readers who were interested in participating in further developments of the literature map. Crucial to the development of the literature map is the contribution from other fellow researchers and designers. The paper presented at the conference was an opportunity for the study to elicit contributions from researchers outside of Northumbria University. The development of the literature map has demonstrated an objective and subjective value. It remains an invaluable tool to facilitate the understanding and construction of prior knowledge in the research enquiry. At the same time, it has provided an effective means of engaging participants in revealing their implicit knowledge and attitudes towards their own and other disciplines. In practical terms the development process has also helped to focus the study into specific subject areas within visual communication and new media disciplines. Key topic areas were identified: *screen and print typography, hypertext, interactivity, film media and communication theory.* The breadth of the literature map suggests that cross-disciplinary influences should not be ignored. The influence of other disciplines would later play an important part in the theory development of the typographic framework (see Chapter 7: Section 7.6).

3.3.1.2 Application Review

Following the literature review a 'design application' review was conducted. It was designed to identify current trends and usage of screen-based typography by reviewing live examples. Its

[3] A copy of the paper can be found in Appendix 2.1

primary aim was to compare how typography was used between non-typographic projects and typographic-based projects. Non-typographic projects use typographic elements as a supporting design element, while typographic-based projects use typography as their primary design element. Comparing usage differences and similarities allowed the study to identify potential factors that have affected the application of typography in screen-based media.

A qualitative methodology based on comparative product analysis (Ünsal, 2000) was adopted for this review. For the purpose of this study, the comparative product analysis's methodology has been derived from the 'comparative method'. This is a more established method used mainly in comparative social science, a branch of social science concerned with cross-cultural differences and similarities. Comparative method is concerned with 'the systematic analysis of a small number of cases for the purpose of generating and testing theories about the causes of important outcomes in these cases' (Mahoney, 2000, p.85). In contrast, comparative product analysis is often associated with market research and is conducted in order to identify current trends, features and functions amongst a range of similar products. However, very little has been written about the methods of comparative product analysis. As a result, the study has had to adapt the process of the comparative method in order to provide a systematic analysis of the design projects.

3.3.2 Stage Two: Typographic Framework Development

3.3.2.1 Questionnaire Survey

Stage Two was the start of the data collection phase. The questionnaire survey was the first phase of the data collection stage. It was clear from the literature and design application review that the discussion and application of screen-based media was still in its formative years. Although this has confirmed the initial assumptions of the study, the research required more specific information regarding educators' and professional practitioners' beliefs relating to the application and role of typography in screen-based interactive media. Findings from the questionnaire provided a useful indicator as to how much of the theoretical standpoint of the study is shared by the sample. For this purpose, a questionnaire survey was designed and delivered on-line.

According to De Vaus (2001), there are many different ways to conduct survey research. It could come in the form of in-depth interviews, observation, content analysis and questionnaires (Greenfield, 2002). The survey method was chosen because it 'provides a rapid and relatively inexpensive way of discovering the characteristics and beliefs of a sampled population' (May, 2001, p.89). Some additional advantages of a questionnaire survey include cheaper cost of administration and a wider geographical reach. For Magee (1987), a mailed questionnaire would

also offer respondents (especially busy designers) time to consider the questions in their own time, at their place of work. Since the respondents were based in the USA, UK and The Netherlands, an electronically mailed survey was considered the most suitable format. It was also flexible enough to provide either a degree of anonymity, or to enable the study to follow-up issues with interested respondents at the next stage of research.

3.3.2.2 Semi-Structured Interviews with Cross-Disciplinary Subject Experts

Findings from the previous stages have identified areas of discussion surrounding the development of an alternate framework. This stage attempts to explore these areas in detail and provide the study with added dimensions of cross-disciplinary knowledge. In this stage, nine semi-structured one-to-one interviews were conducted online with selected discipline experts.

The interview method was chosen because 'it allows both parties to explore the meaning of the questions and the answers involved, which is not so central, and not so often present, in other research procedures' (Brenner et al., 1985, p.3). Unlike the questionnaire method conducted prior to this, 'qualitative interviews allow for understanding and meanings to be explored in depth' (Knight and Arksey, 1999, p.32).

In keeping with the data-driven approach of this study, a grounded theory method was used to analyse the interview data. Grounded theory is concerned with 'the discovery of theory from data' (Glaser and Strauss, 1967, p.1) and is a qualitative research method that uses a 'systematic set of procedures to develop an inductively derived grounded theory about a phenomenon' (Strauss and Corbin, 1990, p.24). Grounded theory methods were used to code the data into meaningful categories that enabled the development of theory from the data.

3.3.2.3 Cross-Media Typographic Framework

Findings from all previous stages were now used to inform and direct the development of an alternate typographic framework. The synthesis of these findings has enabled the development of its purpose, approach, structure and content. In addition, in-depth topics of the framework were derived mainly from key textbooks and literature written on the subject of typography and new media.

3.3.3 Stage Three: Typographic Framework Evaluation and Refinement

The final stage of the study involves evaluating and refining the approach, structure and content of the framework. It consists of two phases: action research projects and peer reviews.

3.3.3.1 Action Research Educational Projects

The aim of this stage was to evaluate the usage of the framework within a practice-based environment. The implementation of the framework will allow the study to evaluate how valuable the framework is in helping users develop a better understanding of typography in a screen-based media. It is also important that development of the framework is informed by practice and not just theory, as typography has always been practice-based. Facilitating this process would require the involvement of the researcher. As Warburton (2001) explains, scientific research tends to be non-interventionist, whereas action research is participatory, requiring the researcher to be key player or actor in the process, taking explicit action in order to 'devise, test or shed light on something' (Archer, 1995, p.6). Action research emphasizes action and critical reflection of the process and outcomes after each action research cycle (Kemmis and McTaggart, 1988). It not only provides a method to bring objectivity to the subjective process of intervention (Warburton, 2001), it also offers a method for practitioners to reflect and improve their practice in a systematic scientific enquiry (McKernan, 1996). As a result, action research was deemed the most appropriate research method for this stage.

When this study was devised, the original plan was to conduct two sets of reflection-in-practice projects, one in an educational environment, and the other in professional practice. However, this plan was deemed overly ambitious by this PhD Programme Mid-Point Review panel due to the time and effort required to conduct a comprehensive study into both areas. It was decided that the study should be scaled down to concentrate solely on an educational environment, increasing the number of student projects from one to three. Increasing the number of projects gave the study an opportunity to evaluate and improve the framework through a series of plan, act, observe and reflect (Lewin, 1946) cycles. Conducting several cycles helped develop adequate rigour, where the early cycles were used to help decide how to conduct the later cycles (Dick et al., 1995).

Three student projects were conducted with students in the multimedia and graphic design programmes at Northumbria University. The study collaborated with the respective multimedia and graphic design tutors in the planning and delivery of a course of study that aimed to introduce a new context of understanding and application for screen-based typography. Action research methodology was used to facilitate the introduction of a typographic curriculum

designed for screen-based media. This method involved repeated cycles of planning, acting, observing and reflecting (Lewin, 1946). Each project contains a complete cycle of these four elements and the end of each project marks the end of one complete cycle of reflection, resulting in a revised and improved plan for the subsequent project. The same cycle (of planning, acting, observing and reflecting) was repeated for the second and third projects.

Although the study was scaled down, professional practice-based concerns were addressed to some extent in the peer reviews conducted after the student projects. This research stage will be discussed next.

3.3.3.2 Peer Reviews

The last phase of this stage involved evaluating the framework and validating its approach, structure and content by conducting peer reviews with selected educators and practitioners. It tested the assumptions generated from this study's research data and revealed any potential flaw in its interpretation. Its conclusions allowed further refinements to the final version of the framework. Crucially, it informed the study of potential applications that can be derived from the framework and enabled the forecast of future post-doctoral development of the framework.

The peer reviews were conducted as focus groups. Kruger describes a focus group as a 'special type of group in terms of purpose, size, composition and procedure' (2000, p.4). This review required a selection of expert reviewers in the field of graphic and typographic design to evaluate, critique and discuss the approach, structure and content of the framework against the research intention. It required an environment that facilitated the presentation of the study and allowed the moderator to obtain focus observations and comments in a permissive and non-threatening environment. If discussions are conducted in a relaxed atmosphere, participants are much more likely to respond to the ideas and comments of others.

According to Stewart and Shamdasani (1990), the advantage of focus groups is that they produce a rich body of data with reduced artificiality of response, and participants are able to qualify or change their response based on their discussions with other participants. Although the most common usage of focus groups is for exploratory purposes, they are also useful as evaluation tools (Stewart and Shamdasani, 1990; Krueger and Casey, 2000; Langford and McDonagh, 2003). The nature of the research purpose in this stage is thus well suited to the focus group format. However, the method is not without its problems. In particular, group dynamism has been highlighted as one of the main weaknesses of the method. Both Morgan (1997) and Stewart and Shamdasani (1990) commented that group behaviour tends towards conformity. Participants are

less likely to express their more extreme views in a group situation than in private. In addition, the presence of one or more dominant participants and poor moderator control can also distort the discussion. Suitable strategies were put in place to minimise these potential problems. In-depth discussion of these strategies will be undertaken in Chapter 9.

The peer reviews mark the end of active data collection. A summary of how each research stage has contributed to the final development of the framework is illustrated In Figure 3.2.

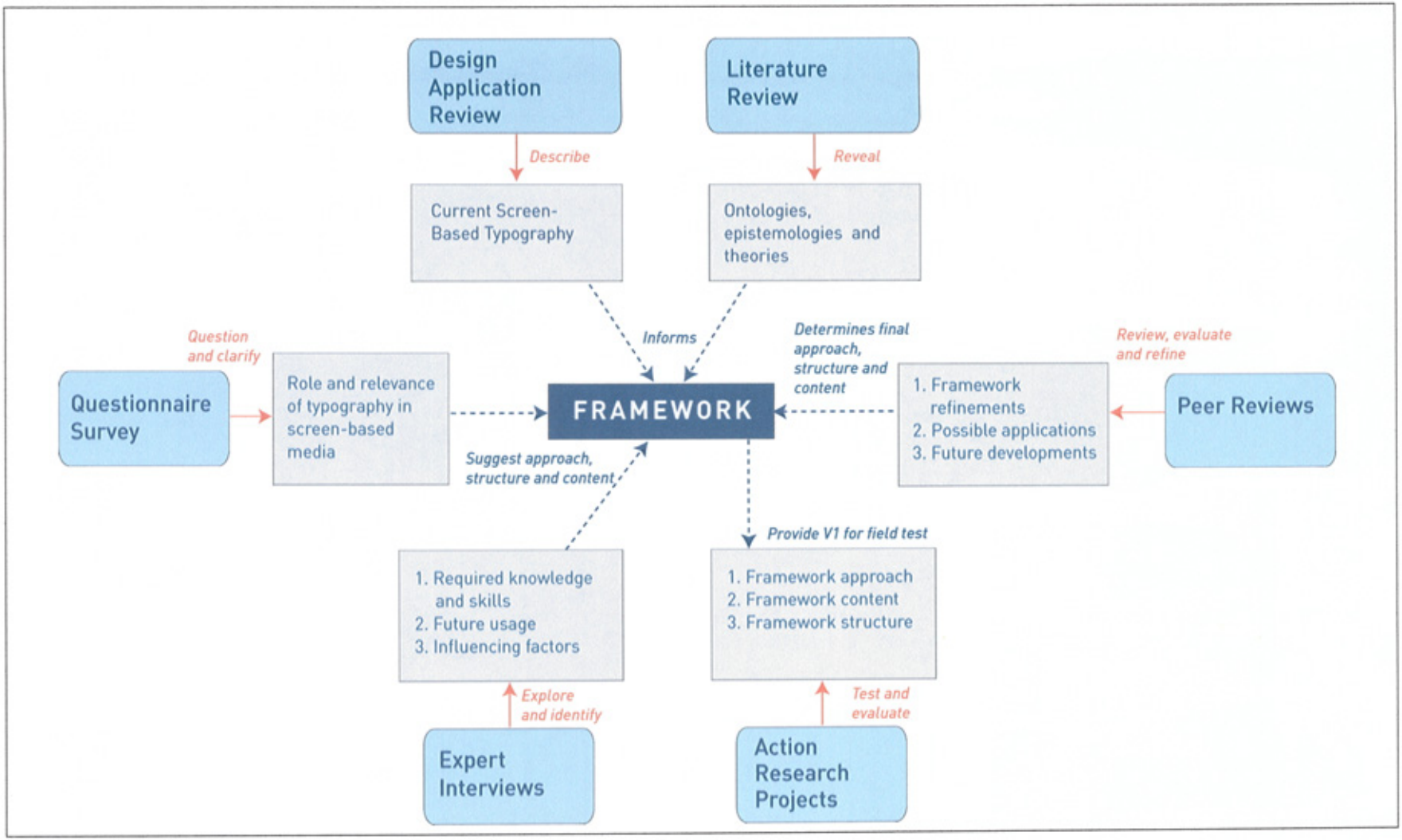


Figure 3.2. Research Stages Contributions

3.4 Summary and Conclusions

This study used a multiple research design strategy (Robson, 2002) using both qualitative and quantitative methods. Its overall approach was action research, where the emphasis was on the iterative cycles of theory development, theory intervention and theory testing within each of the three research stages.

The first research stage was a fact-gathering process, searching and reviewing both theory and practical knowledge. The literature review was complimented with a design application review of current examples. Data collection began in the second research phase using a questionnaire survey and one-to-one interviews. At the end of the second stage a new Typographic Framework was developed, and was subsequently tested in the last research stage. The concluding research stage allowed the framework to be applied and evaluated within an educational environment. The framework was evaluated in two instances: the first evaluation was conducted by the project team (comprising of the action research project collaborators and myself) at the end of each action research project. The second evaluation was carried out by external reviewers during the peer review sessions.

In-depth descriptions of the specific methodology used at every research stage are discussed in Chapters 4 to 8.

CHAPTER 4: COMPARATIVE MEDIA AND DESIGN APPLICATION REVIEW

A Review of Contemporary Interactive Screen-Based Media Content

4.1 Introduction

This chapter discusses the design application review conducted in parallel with the literature review. Whilst the literature review was aimed at investigating and evaluating the current literature surrounding the research topic, the design application review was intended to be a 'design' complement to the literature. In order to develop an understanding of how typography is applied in screen-based media, it is important not only to review its theory, but also the application of type in screen-based media. This review aims to reveal what designers are actually doing, instead of what they say they are doing.

There were three phases to this review. Media and content were categorized and reviewed. Secondly, selection and analysis criteria for the design projects were identified. Finally, comparative analysis was conducted between the two sets of design projects which consisted of type-based[1] and non type-based projects[2]. Each content genre (identified in the first phase) was represented by one example of a type-based project and one example of a non type-based project. This phase was designed to reveal any differences in the way typography was used in various content genres. The selection criteria, analysis and findings of the design application review will now be elaborated.

4.2 Purpose of the Review

There were three main purposes in conducting this media and design application review:

1. To investigate the attributes of current interactive screen media in order to identify their suitability for different content delivery.
2. To review current interactive screen-based projects in order to identify current trends and usages of typography in screen-based interactive media.
3. To compare and contrast the applications of typography in different content genres and media, in order to identify factors which have influenced typographic application in screen-based interactive projects.

[1] *Type-based* projects are design projects that use type as their main design element.
[2] *Non type-based* projects are design projects that use a combination of type, image, sound, video or animation in their design.

4.3 Methodology

4.3.1 Comparative Product Analysis

To 'compare':

1. '...to regard as similar'
2. '...to examine in order to observe resemblances or differences'

(Collins Concise English Dictionary, 1999)

The purpose of comparing is to evaluate similarities and differences of a particular situation, experience, product or feeling. In a sense, the very nature of social research is considered comparative (Øyen, 1990). No social phenomenon can be isolated and studied without comparing it to other social situations. Comparative methodology is generally used in a branch of social science concerned with cross-cultural differences and similarities and has also appeared as part of a sub-group of qualitative methodologies such as grounded theory. Many strands of comparative research have been carried out in varied fields such as linguistics, anthropology, sociology, literature, economics and political science. Nettl (1983) quite clearly illustrates that each discipline has developed its own approaches based on its particular needs. For example, comparative psychology is concerned with ascertaining the similarities and differences in behavioral organization among living beings, while comparative literature deals with themes and motifs of literary content across different cultures. However, it has been widely accepted that even if comparative study has been restricted by specific methods and purpose, it can go beyond the subject matter of an established discipline. At its most fundamental level, comparative method is concerned with 'the systematic analysis of a small number of cases for the purpose of generating and testing theories about the causes of important outcomes in these cases' (Mahoney, 2000, p.85).

The 'comparative' nature of this method reflects the methodological aim of this review. As a result, the comparative method has been adapted by this study in order to provide a systematic analysis of the design projects. This review uses an adapted version of the comparative method, described as 'comparative product analysis'. This is a relatively unknown and undocumented method within academic practice. 'Comparative product analysis' is a general term used mostly in market research, design and engineering sectors to describe the analysis of similar products in order to identify weaknesses and strengths. It is a method often used to compare functions, features or prices of similar products in the market (see for example Ünsal, 2000).

There are two basic strategies in comparative research: (1) study events or groups that differ in many ways but have one thing in common; or (2) study groups that are highly similar but differ in one important respect (Vogt, 2005). The first strategy was more suited to this study because it was interested in exploring how different design projects (with different genre, content and design intentions) used typography. The design application and content elements were considered as the 'explanatory' variables, while the typographic element was regarded as an 'outcome' variable (Robson, 2002, p.159-160). This study regarded the use of the type element as varying according to a project's other design considerations.

This review has three stages: (1) identifying content and media categories; (2) determining the criteria for analysis and (3) conducting media and design application reviews. These three stages are diagrammatically represented in Figure 4.1. Stages 1 and 2 are described in detail in Appendices 3.1.1 and 3.1.2 respectively. In Stage 1, a review of existing screen-based media enabled the study to identify their different delivery channels (refer to A in Figure 4.1) and different genres of content (refer to B in Figure 4.1), which were then externally validated by design practitioners. The outcome of this phase resulted in the identification of six delivery channels and twelve content genres.

In Stage 2, two sets of design projects (one type-based and one non type-based) were chosen to represent each of the twelve content genres. These projects were then analysed against two sets of criteria: general design, and typographic application. Finally, in Stage 3, comparative media and design reviews were conducted. The media review (refer to Section 4.4) enabled the study to determine the usages and characteristics of different types of content, while the design review (refer to Section 4.5) revealed how type is applied in various contexts and purposes. This chapter focuses primarily on Stage 3, which describes the results of the comparative media and design reviews.

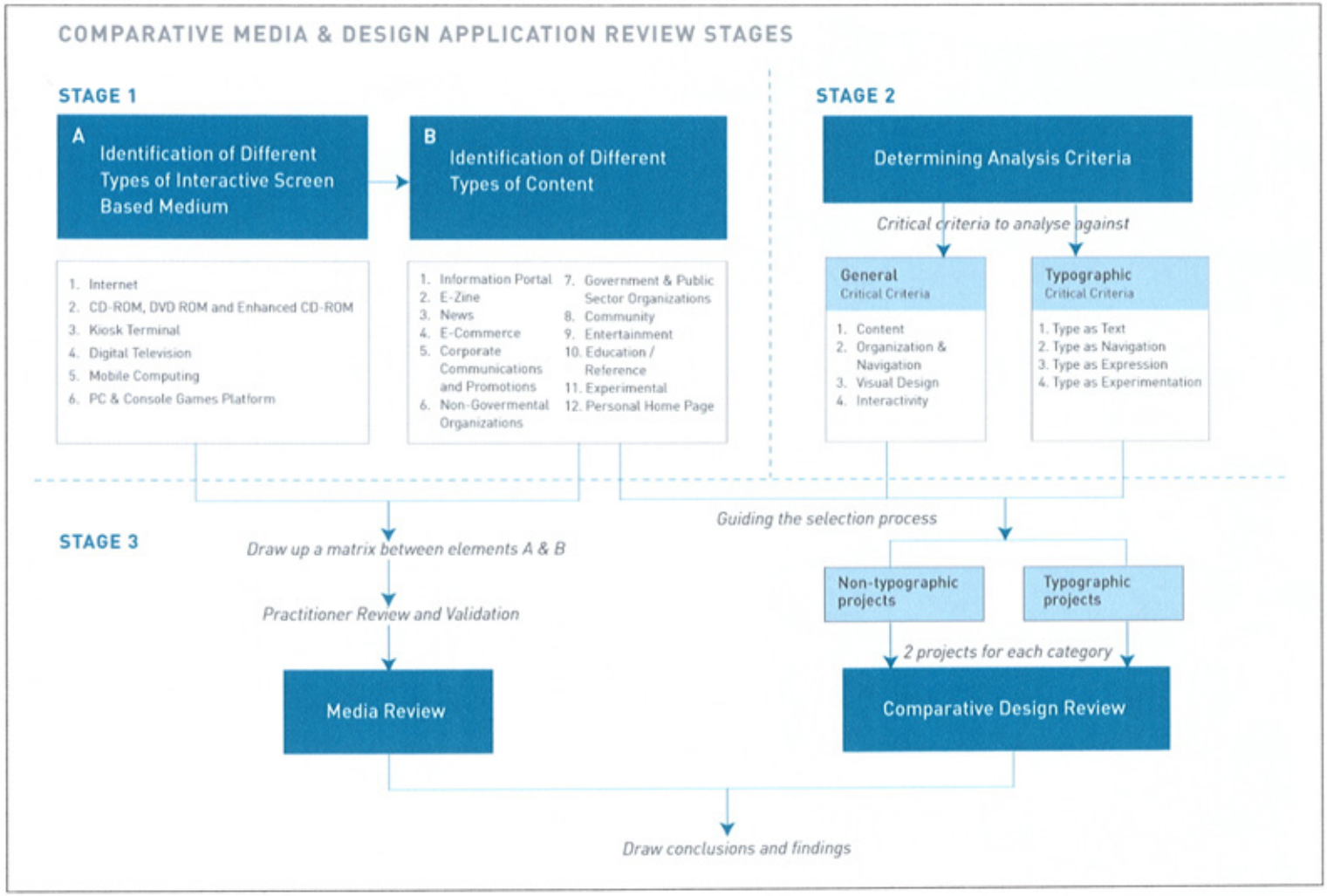
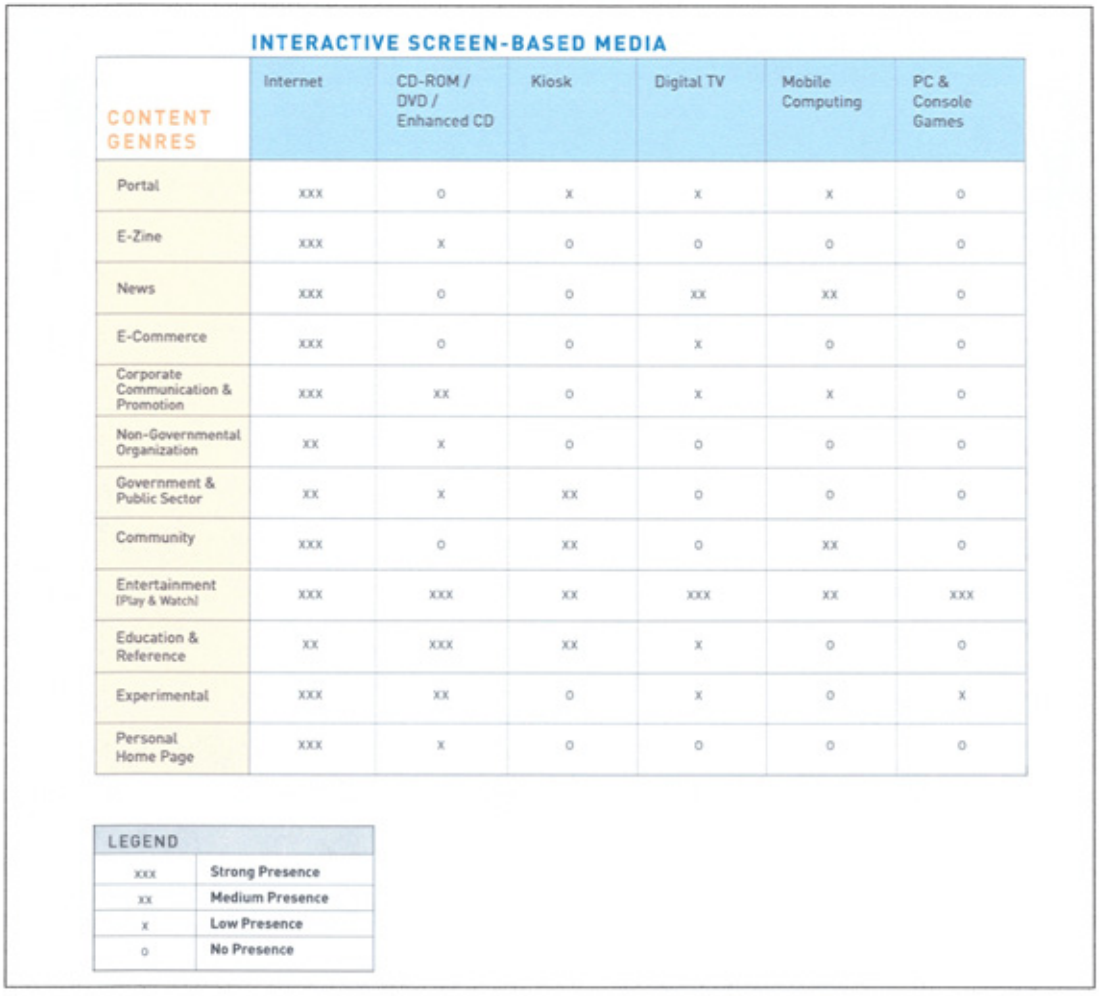


Figure 4.1. Comparative Media and Design Application Review Stage

4.4 Comparative Media Review

This section describes findings from the review of the content and media categories[3]. The review was conducted by matching the usage of each media to the type of content frequently used in each respective medium. The frequency and quality of the content were compared in these six media, using a four-level rating system: strong, medium, low and no presence. A rating of 'Strong Presence' indicates that a type of content is considered synonymous with a particular medium, while a rating of 'Medium Presence' indicates that a type of content can frequently be located in a particular medium. A rating of 'Low Presence' indicates that a type of content is only occasionally found in a particular medium. A rating of 'No Presence' indicates that a type of content is not evident in a particular medium. As a result, a matrix of content and media category ratings was developed. This matrix was then presented to a number of practitioners for review and validation. The final ratings were amended following this review process. The final result of this combined analysis is summarized in Figure 4.2.



INTERACTIVE SCREEN-BASED MEDIA

CONTENT GENRES	Internet	CD-ROM / DVD / Enhanced CD	Kiosk	Digital TV	Mobile Computing	PC & Console Games
Portal	xxx	o	x	x	x	o
E-Zine	xxx	x	o	o	o	o
News	xxx	o	o	xx	xx	o
E-Commerce	xxx	o	o	x	o	o
Corporate Communication & Promotion	xxx	xx	o	x	x	o
Non-Governmental Organization	xx	x	o	o	o	o
Government & Public Sector	xx	x	xx	o	o	o
Community	xxx	o	xx	o	xx	o
Entertainment (Play & Watch)	xxx	xxx	xx	xxx	xx	xxx
Education & Reference	xx	xxx	xx	x	o	o
Experimental	xxx	xx	o	x	o	x
Personal Home Page	xxx	x	o	o	o	o

LEGEND	
xxx	Strong Presence
xx	Medium Presence
x	Low Presence
o	No Presence

Figure 4.2. Content and Media Matrix

[3] Appendix 3.1.1 discusses the selection process, and identification of media and content genres prior to this review.

4.4.1 The Internet

According to the Hobbes Internet Timeline, there has been an increase in the number of Internet Hosts from 130,000 in 1989 to 56,218,000 in 1999 (Zakon, 2005). The increase in the number of people getting connected to the Internet confirms the view that this medium has become the most prevalent form of digital communication. As a result, it is not surprising that the majority of the design projects chosen for this comparative analysis are Internet-based. Not only are there millions of web pages currently online, there is also a wide range of content being published throughout the Internet. The Internet is the only medium out of the six reviewed to have all twelve genres represented. Table 4.1 illustrates the analysis of individual content genres found on the Internet:

THE INTERNET			
Strong Presence	**Medium Presence**	**Low Presence**	**No Presence**
• Portal • E-Zine • News • E-Commerce • Corporate communication & promotion • Community • Entertainment (watch & play) • Experimental • Personal home page	• NGO • Government • Education & reference	None	None

Table 4.1. Division of Content Genres on the Internet

Closer inspection of the content revealed that the wide usage of the Internet for different communication purposes could be attributed to its versatility and accessibility. Online publishing is relatively cheap in comparison with traditional media. Audience reach is enormous and growing daily. The dissemination of information is far greater in both depth and reach than ever before achieved with print technology. Low publishing cost and wide audience reach is especially conducive for the proliferation of e-zines, community, experimental and personal types of content. Community sites are especially suited to the online environment as it easily transcends geographical, cultural and social constraints.

E-commerce (incorporating B2B, B2C and C2C markets) has been one of the more profitable business models[4] to emerge from the Internet. The 2003 Actinic E-commerce survey (Actinic, 2003) conducted with 185 companies shows that 71% of UK SME's e-commerce sites were profitable that year, whilst the 2004 report (Actinic, 2004) highlights that e-commerce adoption has risen from 27% to 42% in 2004 among companies that already have a website. Although not all e-commerce sites are bound to be profitable (Amazon.com for example only began to make an annual profit in its eighth year of trading), the Internet is an ideal medium to sell products to a global audience. Consumers are now given a wider range of choices and have the ability to easily and quickly compare prices.

4.4.2 CD-ROM, Enhanced CD-ROM and DVD-ROM

Traditionally, the CD-ROM has always been the medium of choice when content requires a high data rate transfer. Prior to the Internet, the CD-ROM was the primary medium for interactive multimedia content and its main advantage was its relatively fast rate of data transfer and its data capacity. Although the speed of the Internet has increased with the introduction of high bandwidth network, the enlarged data capacity offered by DVD-ROMs has further consolidated the use of disk-based distribution for interactive content. It is not surprising that CD-ROMs are a popular medium for the delivery of large educational and database reference systems. The introduction of DVD-ROMS a few years ago has also enabled the delivery of entertainment content (such as digital movies) in a cost effective manner.

CD-ROM / DVD-ROM / ENHANCED CD			
Strong Presence	**Medium Presence**	**Low Presence**	**No Presence**
• Education & reference • Entertainment	• Corporate communication & promotion • Experimental	• E-Zine • NGO • Government • Personal home page	• Portal • News • E-Commerce • Community

Table 4.2. Division of Content Genres on CD-ROM / DVD-ROM / Enhanced CD

Compared to other online media such as the Internet, the main disadvantage of disk-based distribution is its lack of updateability and connectedness. Once data is recorded onto the CD or DVD-ROM, it cannot be erased or recorded over. This attribute makes this medium unsuitable to deliver content that requires a daily or regular update like a news or portal site. The issue of connectedness has also meant that e-commerce content is unsuited to this medium.

[4] According to Rappa (1999), other types of Internet related business models are brokerage, advertising, infomediary, merchant, manufacturer, affiliate, community, subscription and utility. Amazon, for example, would be categorized under the merchant model.

4.4.3 Kiosk Terminal

Kiosk terminals are usually installed at public spaces to provide access and information to visitors. The role of a kiosk is generally to provide users with quick and relevant information specific to a particular place. A museum kiosk may be used to deliver interactive content as part of an exhibition. Alternatively, a kiosk installed in a public square may be used to provide information about current events and public attractions to visitors. Kiosks are generally not employed very often, as they tend to have high production and maintenance costs. This may be the reason why there aren't many types of content delivered through this medium. However, a kiosk may be suitable in cases where useful information (such as special daily offers) needs to be accessed easily, in an unsecured and public area. These factors require a system that is physically robust and reliable.

KIOSK TERMINAL			
Strong Presence	**Medium Presence**	**Low Presence**	**No Presence**
None	None	• Portal • Government • Community • Entertainment • Education & reference	• E-Zine • News • E-commerce • Corporate communication & promotion • NGO • Experimental • Personal home page

Table 4.3. Division of Content Genres on Kiosk Terminal

4.4.4 Digital Television

According to the 2001 Pace Report (a Gallup survey of US and UK adults expressing their views about digital cable television), the potential of digital television goes well beyond movies, and viewers are increasingly using digital television to access additional information from news, educational, music and sports programmes. Further, the potential of e-commerce or, in this case, t-commerce will be boosted by a major increase in consumer acceptance of using digital television to purchase products. According to the report, the UK digital television market is considered to be the most technologically advanced in the world. This is attributed to the level of competition amongst broadcasters and also the adoption of value-added services such as home shopping and email. Therefore it is not surprising that the quantity and quality of interactive content found in UK digital television is rising. In particular, News and Entertainment programmes are currently the most popular type of content delivered through digital television (refer to Table 4.4).

Although the Pace Report predicts an increase in e-commerce through digital television, currently the features and choices provided by content providers are still limited in comparison to other screen-based media. In fact only 12% of the UK respondents rated home shopping and banking features as a key influence for switching to digital television. This factor contributes to the low presence of e-commerce content found on digital television. However, this review recognised the potential for growth and an increased adoption of e-commerce in the future for digital television.

DIGITAL TELEVISION			
Strong Presence	**Medium Presence**	**Low Presence**	**No Presence**
• Entertainment	• News	• Portal • E-Commerce • Corporate communication & promotion • Education & reference	• E-Zine • NGO • Government • Community • Experiment • Personal home page

Table 4.4. Division of Content Genres on Digital Television

Digital television is unsuited to the delivery of E-Zine and community news. Unlike the Internet, creating interactive content for digital television is expensive and normally tied to broadcast programmes. In general information-based features, which require constant updates and maintenance, tended to be delivered through the Internet as a cheaper and easier alternative.

4.4.5 Mobile Computing

Although the number of mobile phones and other personal wireless communication devices are becoming increasingly popular, rich interactive content has been slow to develop for this medium. This is because, up until a few years ago, the type of non-voice data that can be sent through wireless technology was limited to rudimentary text messaging. Wireless Application Protocol (WAP), an open standard for applications over wireless networks, was introduced in the early 1990s. WAP was hyped when it was introduced, misleading users to expect similar performance to the Internet. However, the high cost of developing WAP enabled content, technical constraints and usability impracticalities have contributed to the decline of interest in WAP technology over the last few years.

In its place, 3G (which stands for Third Generation) is currently being hailed as the future of wireless technology[5]. 3G offers 'enhancements to current applications, including greater data

[5] At the time of conducting this review, 3G technologies were being hailed as the future of wireless technology. However, since the completion of this study in 2006, the emergence of a newer group of technologies called 4G (fourth-generation) has superseded this claim. At the moment, there seems to be no formal definition of 4G,

speeds, increased capacity for voice and data and the advent of packet data networks versus today's switched networks' (Thomas, 1999). This new generation of wireless devices promises to deliver richer and fuller content than before.

Although rich interactive content may be the future of mobile computing, the majority of current content still consists of static text and photo messaging. Text and photo messaging support the activities of community building, communication and information delivery. Entertainment content (particularly video content) will soon become more popular and prevalent as data storage capacity and bandwidth increases.

At present, the future of mobile computing is dependent on the ability of developers to meet the needs of consumers, and resolve any ongoing difficulties with hardware and software. Without the support of better applications, services and content, wireless technology will remain an undelivered promise.

MOBILE COMPUTING			
Strong Presence	**Medium Presence**	**Low Presence**	**No Presence**
• None	• News • Community • Entertainment	• Portal • Corporate communication & promotion	• Portal • E-zine • E-Commerce • NGO • Government • Education & reference • Experimental • Personal home pages

Table 4.5. Division of Content Genres on Mobile Computing

4.4.6 PC and Console Games

PC and console-based games are ideal examples of highly engaging and personal interactive experiences. The levels of engagement achieved in most game experiences are not found on any other medium reviewed here, hence it is not surprising that this medium has a very strong presence in the genre of entertainment. The other media that have similarly high but different types of content are the Internet and digital television. For digital television, entertainment is based on 'watching' rather than 'playing', while the Internet has actually supplemented and

however the term can be loosely used to describe technologies 'that are high-speed wireless networks covering a wide area, designed above all for carrying data, rather than voice or a mixture of the two' (Economist, 2003). It is predicted that the deployment of 4G technologies will begin from 2010 onwards (Wikipedia contributors, 2006).

supported the PC and console games because it provides a platform for users to play in an online multi-user environment.

PC AND CONSOLE GAMES			
Strong Presence	**Medium Presence**	**Low Presence**	**No Presence**
• Entertainment (Play)	• Experimental	• None	• Portal • E-Zine • News • E-Commerce • Corporate communication & promotion • NGO • Government • Community • Education & reference • Personal home pages

Table 4.6. Division of Content Genres on PC and Console Games

4.5 Comparative Design Application Review

4.5.1 Design Projects Descriptions

After the comparative media review, design projects were reviewed in order to identify how typography is applied in screen-based projects. As the researcher, I initially reviewed these projects and its results were then validated by my supervisors, as well as by professional and educational practitioners in Northumbria University.

Two projects ('type-based' and 'non type-based') were selected to represent each of the content genres. *Type-based* projects are defined as designs using typography as their main visual element while *non type-based* projects are defined as designs using a combination of type, image, sound, video or animation. A total of twenty-six interactive projects were selected for this review[6]. Table 4.7 lists and provides brief descriptions of the selected projects. Each genre was represented by two projects, however the Entertainment genre was an exception due to differences between broadcast and interactive content. As a result, there were four projects selected to represent this genre.

[6] Refer to Appendix 3.1.2.1 for sources used to identify these design projects.

Content Genres	Projects	Style	Medium	Description	Screen Shot
Portal	www.typographica.ca	Type-Based	Website	Typographica is a daily journal on the subject of typography featuring news, observations, and open commentary on fonts and typographic design.	
	www.k10k.net	Non Type-Based	Website	Kaliber10000 (K10k) is an independent, non-commercial webzine and portal, which focuses on design and creative issues.	
E-zine	www.mediamatic.net	Type-Based	Website	Mediamatic is a bi-lingual New Media, Art and Culture webzine with three yearly issues.	
	www.wired.com	Non Type-Based	Website	This is an online version of the WIRED magazine, publishing current news on technology and culture.	

Table 4.7. Selected Design Projects

Content Genres	Projects	Style	Medium	Description	Screen Shot
News	news.bbc.co.uk	Type-Based	Website	This is the BBC online site for news and sports.	
	Sky News	Non Type-Based	Digital TV	Sky News is a 24-hour news broadcast on digital TV for subscribers to SKY Satellite TV. It includes extra interactive features for viewers.	
E-Commerce	www.lineto.com	Type-Based	Website	Lineto is a digital retail store for typographic products and typefaces. It is also meant to be a platform for possible collaborative projects, ideas and debates on typographic issues.	
	www.amazon.com	Non Type-Based	Website	Amazon is one of the most well-known, popular and pioneering e-commerce sites on the Internet. It started out specialising in selling books and has now extended its range to CDs, DVDs, software, electronics, toys, tools and kitchen accessories.	

Table 4.7. Selected Design Projects (continued)

Content Genres	Projects	Style	Medium	Description	Screen Shot
Corporate Communication and Promotion	www.fishcansing.com	Type-Based	Website	The Fish Can Sing is a creative public relations agency. This site uses a purely typographic approach to demonstrate their conceptual approach.	
	www.nike.com	Non Type-Based	Website	This is Nike's main site. It is divided into different sub sites which, depending on the geographical area the user selects, will present the user with different combinations of other sub sites.	
Non-Governmental Organization	www.randomaccessmemory.org	Type-Based	Website	A site where visitors can deposit their own memory based on date, name and subject. These memories are searchable and can be shared with other visitors.	
	www.adbusters.org	Non Type-Based	Website	This site represents The Media Foundation, which is a global network of artists, activists, writers, students, educators and entrepreneurs who want to advance the new social activist movement of the information age.	

Table 4.7. Selected Design Projects (continued)

Content Genres	Projects	Style	Medium	Description	Screen Shot
Government and Public Sector Organization	www.loc.gov	Type-Based	Website	The website for America's Library of Congress. It provides the public with access to the library catalogue, information on its services and access to its online digital collections.	
	www.nasa.gov	Non Type-Based	Website	The website for the National Aeronautic Space Agency. It is an informative site delivering information about NASA and its current space missions, as well as providing educational content tailored to different audiences.	
Community	www.metafilter.com	Type-Based	Website	Metafilter is a community weblog that anyone can contribute to. Its range of topics is varied and changes daily according to the current topical issues.	
	www.habbohotel.com	Non Type-Based	Website	Habbo Hotel is a character and environment-based chat site. Users are able to choose personalised avatars as a self-representation in chat rooms modelled after rooms in the hotel.	

Table 4.7. Selected Design Projects (continued)

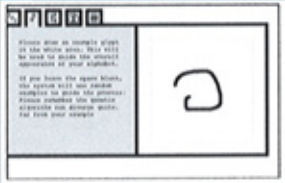
Content Genres	Projects	Style	Medium	Description	Screen Shot
Entertainment (watch)	www.bemboszoo.com	Type-Based	Website	Bembo's Zoo features an animated alphabet from A-Z, set in the Bembo typeface. The letters are animated and arranged to resemble animals from each letter.	
	www.atomfilms.com	Non Type-Based	Website	Atom Films features a growing collection of shockwave, flash animation and digital videos submitted by amateur animators or directors.	
Entertainment (play)	Alphabet Synthesis Machine	Type-Based	Website	This project allows users to design their own letterform by selecting different values of a set of criteria. These criteria include thickness of stroke, percentage of mutations and friction. The final result of each version will be archived.	
	Unreal Tournament	Non Type-Based	PC & Console Games	Unreal Tournament is a PC-based multiplayer first person shooter game. It allows users to customise environments, model their own characters, and add levels and weapons.	

Table 4.7. Selected Design Projects (continued)

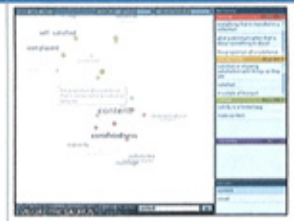
Content Genres	Projects	Style	Medium	Description	Screen Shot
Education / Reference	www.visualthesaurus.com	Type-Based	Website & CD-ROM	Visual Thesaurus is a tool presenting a visual representation of English Language. It is a tool to explore, study, and analyse the structure and relationship of language.	
	Tesla Coil	Non Type-Based	CD-ROM	Tesla Coil was designed for the casual Science Center (US) visitor. It uses humour and interactivity to deliver complex scientific principles.	
Experimental	www.beaufonts.com/pssst	Type-Based	Website	'Pssst' is a Beaufont's project, which allows anyone to respond and contribute to a set of ever-evolving typefaces via the internet. Similar to the Alphabet Synthesis Machine, but with an added element of multiple user collaboration.	
	www.yugop.com	Non Type-Based	Website	This site features a collection of interactive experiments devised by Yugo Nakamura. This version was expanded from mostly text-driven experiments in the earlier versions to feature more visual and sound-based experiments.	

Table 4.7. Selected Design Projects (continued)

Content Genres	Projects	Style	Medium	Description	Screen Shot
Personal Home Pages	www.peterb.sk	Type-Based	Website	This is the personal site of typographer and designer Peter Bilak. He uses a very basic and austere typographic application for the whole site.	
	www.nobodyhere.com/justme	Non Type-Based	Website	A site filled with interesting visual and poetic explorations by artist Jogchem Niemandsverdriet. He has created an interactive visual mapping of his random thoughts.	

Table 4.7. Selected Design Projects (continued)

4.5.2 General Design Analysis: Identifying Key Criteria for the Successful Application of Interactive Projects

Two rounds of reviews were conducted with the design projects. The first review evaluated these projects against the general design criteria, while the second review evaluated them against the typographic application criteria. For the general design review, the projects were measured against four critical criteria[7] derived from Shedroff (1994; 2001) and Nielson (2000a; 2000b). They were:

1. Content
2. Organization and navigation
3. Visual design
4. Interactivity

Evaluations of each project's criteria were mapped on a four-directional axis chart. This chart is a visual representation of the comparative analysis conducted for each project. Figure 4.3 illustrates the areas of measurement (ranging from high to low), while Figure 4.4 demonstrates an example of the evaluation for the Typographica website. Table 4.8 provides detailed descriptions relating to these three levels of measurements:

Levels of Measurement	Description
High	A rating of 'high' indicates that the design project has achieved a distinctive and successful application using this criterion. This criterion might also have been identified and referred to by external sources as a distinguishing design feature of the project.
Medium	A rating of 'medium' indicates that the design project has used a criterion in accordance to best practice methods within the field of screen-based design, but did not employ it as a distinguishing or innovative design element.
Low	A rating of 'low' indicates that the design project has used a criterion below the standard of best practice methods. It also indicates that the criterion was not given much design consideration.

Table 4.8. Description of Evaluation Measurements

The evaluation of each project was judged on the quality and success of its respective application. In the Typographica example, the website scored high in visual design, and in organization and navigation criteria. In comparison, content and interactivity criteria registered a medium score. A full illustration of completed plots is available in Appendix 3.2. Figures 4.5 and 4.6 illustrate the

[7] Further descriptions of these four criteria can be found in Appendix 3.1.2.3.

combined reviews for both sets of design projects. Reviews for type-based projects are identified in blue, while reviews for non type-based projects are identified in orange.

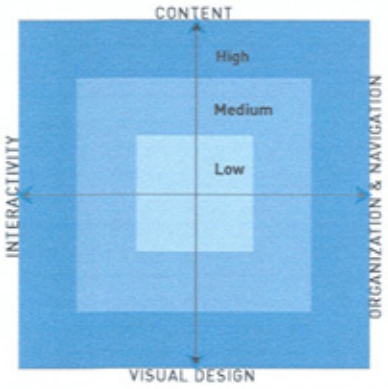


Figure 4.3. Evaluation Guide

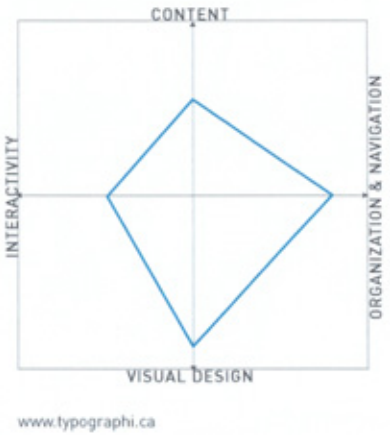


Figure 4.4. Evaluation for Typographica Website

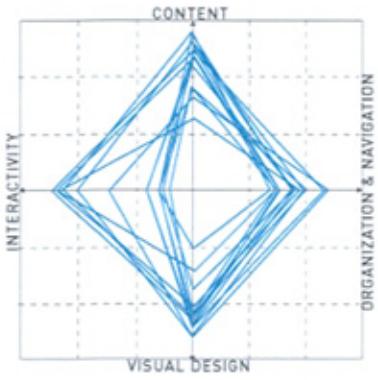


Figure 4.5.
Design Analysis: Type-based Evaluations

Figure 4.6.
Design Analysis: Non Type-based Evaluations

Generally, there weren't any significant differences between the two groups. Their similarities seemed to indicate that the usage of type was not the determining factor of success for a project. Significantly, the quality of content was high on most projects, suggesting that this is the most influential criterion.

4.5.2.1 Content

Amongst the four general criteria, the content criterion was consistently rated higher than any of the others. Content in all projects was rated no lower than the medium level of quality. This suggests that an interactive project is more likely to succeed if it contains engaging and relevant content for its targeted audience. However, having high quality content is not enough to achieve its aims. Other criteria have to be equally high in quality. The NASA (Figure 4.7) website, for

example, reflects quality content delivered in a highly interactive and engaging manner. As there is extensive and varied content contained within the site, its design and navigation is a balance between engagement and simplicity concerns. Visual design has to engage users through different visual and interactive content, while its navigation has to be simple and intuitive to ensure usability. In comparison, the Library of Congress (Figure 4.8) website was considered less successful, even though the quality and depth of its content was equal to the NASA site. This was because its visual design was less compelling and engaging, and its navigation was more complex.

When content was compared between type-based and non type-based projects, no critical difference was detected between the two groups. Both sets of projects score equally high for content. The choice of using a more type-based approach did not affect the quality of content delivery.

Figure 4.7.
Screen Shot of the NASA Website 1

Figure 4.8.
Screen Shot of the Library of Congress Website

4.5.2.2 Organization and Navigation

A majority of the projects received a medium rating for the criterion of organization and navigation. Only three projects scored higher: Typographica (Figure 4.9), Peter Bilak (Figure 4.10) and NASA (Figure 4.7 and Figure 4.11). Typographica uses a single design template for all its content. Its front page presents three to four articles posted by the site editors. Previous articles are archived and made searchable. This is a flexible system, allowing a continuous flow of content to be archived without making it too complex for the user to search or locate. The action of archiving and the placement of these pages are kept hidden away from the user. Instead of hiding the content, Peter Bilak uses a visual hierarchy of the content (arranging it from left to right) to depict the information hierarchy. Each level remains visible to the user as he/she navigates through the site, enforcing the structure of the content. In contrast, NASA's site is very content-heavy and has distinct categories of information. It aims to inform, educate and engage users from a variety of age ranges on a variety of issues relating to space exploration. With these

objectives in mind, the site is organized in three main categories. The first category contains general information about NASA, its missions and news. The second category contains specific content tailored to specific groups of users. The third category contains information relating to life on earth, humans in space and space exploration. Each category is treated like a mini-site with its own distinct look and navigation, to ensure easy user orientation.

Whilst the organization and navigation of content is a crucial factor to the success of an interactive project, this review has revealed that most projects can be successful by merely registering an average score in this criterion provided it scored high in the content criterion. For example, the Amazon site may not necessarily have the most usable interface; however the quality of its content, service and functionality ensures that it is still one of the most popular e-commerce sites for book purchasing. However, in cases where projects have a high level of complex information, the organization and navigation criterion must be considered to be a key critical factor to the success of the project. For example, portal, news, e-zine and e-commerce sites will require careful design consideration of their organization and navigation structure, due to the breath and depth of their content.

Figure 4.9.
Screen Shot of the Typographica Website

Figure 4.10.
Screen Shot of the Peter Bilak Website

Figure 4.11. Screen Shot of the NASA Website 2

4.5.2.3 Visual Design

Generally, visual design was considered to be a critical criterion in more promotional and communication led content. Projects in the corporate communication, experimental and personal site genres tended to reflect a higher quality of design outcomes.

There was no noticeable difference in the quality and range of the visual design between type-based and non type-based projects. The decision to use a more typographic approach did not influence the quality of design. The choice of using either approaches depended heavily on the type of content and the message being communicated.

Content

The nature of the content would influence the decision to use either a more type-based or non type-based approach. For example, the Metafilter weblog site (Figure 4.12) is predominately type-based because its main content consists only of comments and messages submitted by users. There is no requirement for the usage of images, videos or animation to enhance its content. In comparison, Habbo Hotel's (Figure 4.13) unique concept lies in its usage of graphical representation of a user and its environment to enhance the online social experience. In both projects, the visual design approach was predetermined by the nature of their content.

Figure 4.12.
Screen Shot of the Metafilter Website

Figure 4.13.
Screen Shot of the Habbo Hotel Website

Message

The Fish Can Sing public relations company website (Figure 4.14) is heavily typographic because of its need to emphasize its conceptual approach to projects. Their message is more effectively delivered through simple and well-written text rather than through rich imagery. In comparison, Nike's website (Figure 4.15) is driven by rich and engaging imagery, as it aims to project a dynamic, hip and active style in line with its brand image.

Figure 4.14.
Screen Shot of the Fish Can Sing Website

Figure 4.15.
Screen Shot of the Nike Website

4.5.2.4 Interactivity (Feedback and Control, Creativity and Productivity, Communications, Adaptivity)

The ratings for interactivity were spread across the range. Non type-based projects seemed to have more varied levels of interactive quality. The outcome of the review suggested that like all the other criteria (with the exception of the content criterion), interactivity was not the critical criterion required for a successful interactive project. It only became the most critical factor when the intent of the project was to deliver a highly interactive experience, for example in entertainment, experimental or community projects. Generally, interactivity is the last criterion projects would want to address, as it is considered to be the most time consuming factor to design and implement well.

Sites that have high interactivity tended to reflect the Creativity and Productivity, and Adaptivity aspects of interaction (as opposed to Feedback and Communication aspects described in Section 4.3.3.3). For example, the Alphabet Synthesis Machine (Figure 4.16) and the Chinese Whisper (Figure 4.17) websites are ideal examples of how systems enable users to interact and play with the tools available to create new experiences or products. Whereas games such as the Unreal Tournament role-playing game (Figure 4.18) constantly adapt and react to the user's actions in order to create unique experiences or environments (within flexible parameters programmed by the game's designers) during every gaming session.

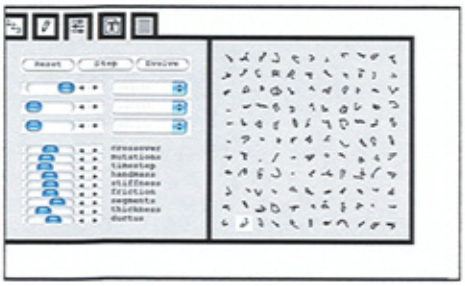


Figure 4.16.
Screen Shot of the Alphabet Synthesis Machine Application 1

Figure 4.17.
Screen Shot of the Beaufonts' Chinese Whisper Application

Figure 4.18. Screen Shot of the Unreal Tournament Computer Game

4.5.3 Typographic Application Analysis: Identifying Differences in Type Usage

The second stage of the design review involved evaluating the typographic application of each project against four criteria[8]:

1. Type as text
2. Type as navigation
3. Type as expression
4. Type as experimentation

As with the general design criteria, each project was evaluated individually on a four-directional axis chart. A full illustration of completed plots is available in Appendix 3.3. The review and evaluation of each project was based on the role and application of its typography. Figures 4.19 and 4.20 illustrate the combined plots for the type-based and non type-based projects. Unsurprisingly, projects with a high level of typographic experimentation were projects from within the type-based group. Only one project in the non type-based group registered a medium level of typographic experimentation. Text was the primary role of type in most of the design

[8] Refer to Appendix 3.1.2.4 for a description of these four criteria.

projects. Navigation was type's secondary role. There was no discernable difference in the way type was used expressively between the two groups. This was surprising as it was initially predicted that the usage of expressive typography would generally be higher in type-based projects. The typographic elements in non type-based projects tended to be less considered when compared to projects that used a typographic-led approach. Additionally, type's integration with other design elements such as images, video or animation was less successful. This may reflect that less time and effort is spent on the design and application of typography when other design elements are employed. Additionally, the overall quality of typography was generally lower in non type-based projects than type-based projects. The few exceptions were the NASA, Nike and Adbuster sites.

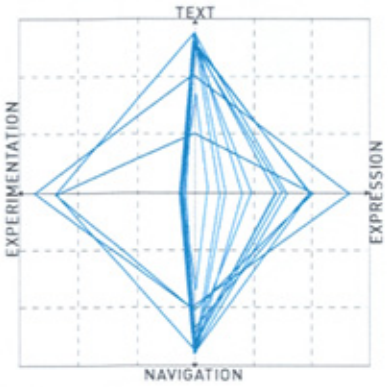


Figure 4.19.
Typographic Analysis: Type-based Evaluations

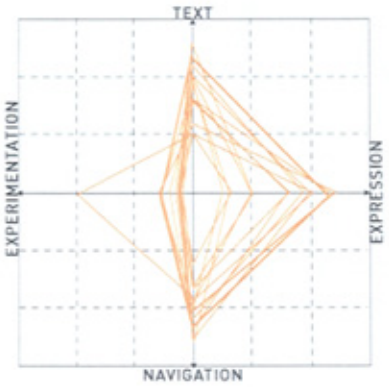


Figure 4.20.
Typographic Analysis: Non Type-based Evaluations

4.5.3.1 Type as Text

Amongst the four typographic criteria, type was most frequently used as text. The quality of the text was judged against the readability and legibility level of the text. It was also judged against the quantity of text used in each project. By their nature, some projects were more textually based than others, for example the BBC news site has much more textual content than the Adbuster site. Therefore a more considered approach was needed to ensure that the levels of readability and legibility were maintained. This not only included the selection of readable typefaces but also the careful consideration given to the layout, line lengths and size of the text. Crucially, the length of text written should be tailored to a screen-based medium. The two examples shown below are good examples of well-designed text for the Internet medium. The Mediamatic website (Figure 4.21) demonstrates an innovative usage of size variation and placement to emphasize information hierarchy. The BBC news site (Figure 4.22) uses simple colour coding in its text to indicate different types of textual content. Black text is used for the main articles, while blue text is used to indicate other related articles or external links referring to the main text.

Figures 4.21.
Screen Shot of the Mediamatic Website

Figures 4.22.
Screen Shot of the BBC News Website

4.5.3.2 Type as Navigation

Navigation was the second most common usage of type in design projects. It was observed that non type-based projects tended to use more graphical rather than text interface. Generally there wasn't a critical difference in the quality of the interface depending on which approach was used. The only advantage a text-based interface provided was the clarity of communication (in this case providing a denotative rather than a connotative type of communication). However, in cases where an icon such as a shopping cart was a more recognizable symbol (its connotative attributes imply a set of qualities such as shopping, browsing and purchasing), it was more advantageous to use icon-based interfaces. In comparison, Sky News Digital (Figure 4.23) uses a text menu instead of icons to represent news stories. It is more expedient for viewers to scan keywords of a story rather than interpret icons. Sometimes type can perform a dual role of text and navigation. For example, the Visual Thesaurus (Figure 4.24) is an application which presents a visual representation of English Language. It displays the interrelationship between words and their meanings as spatial maps. At the same time, users are able to explore the meaning of each word by selecting the individual words themselves.

Figure 4.23.
Screen Shot of the Sky News Digital

Figure 4.24.
Screen Shot of the Visual Thesaurus Website

4.5.3.3 Type as Expression

The usage of type as an expressive element was average in both groups. Generally, there wasn't a significant difference between the two groups. Screen-based type is used predominately as text or as interface. Expressive type seemed to appear in two main forms: animating letterforms or static expressive headlines. The Bembo's Zoo children's site (Figure 4.25 and 4.26) is an animal alphabet site with animation created from the letters in each animal's name. The letters are arranged to provide a visual representation of the animal. Its expressive and innovative use of type is reminiscent of the traditional print-based abecedaries in which letterforms reveal the characteristics of other objects or things. In comparison, designers of the Nike website (Figures 4.27 and 4.28) purposefully selected typefaces whose visual styles express the mood and tone of Nike's current brand image. In this case, the basketball sub-site uses a Blackletter (or Old English) style of typeface to project a gritty and inner-city image of basketball.

Figures 4.25 and 4.26. Screen Shots of the Bembo's Zoo Animated Letterforms

Figures 4.27 and 4.28. Screen Shots of the Nike's Basketball Website

4.5.3.4 Type as Experimentation

The usage of type as an experimental element was the least observed phenomenon in all of the design projects. This was not surprising as the percentage of experimental content on screen-based medium is still considerably low. Generally, the review revealed two main forms of typographic experimentation projects:

1. The ability for users to create new letterforms by changing or selecting variables linked to the shape of the letters. For example, the Alphabet Synthesis Machine (Figure 4.29) and the Beaufonts' Chinese Whispers project (Figure 4.30).
2. The letterforms reacting to user inputs (either through the mouse or keyboard). For example, Yugop's VaioNet-100 (Figure 4.31) and the Shift project (Figure 4.32).

Figure 4.29. Screen Shot of the Alphabet Synthesis Machine Application 2

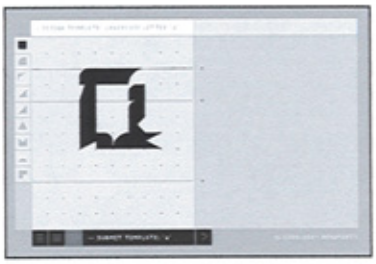


Figure 4.30. Screen Shot of the Beaufonts' Chinese Whisper Project

Figure 4.31.
Screen Shot of the Yugop's VaioNet-100 project

Figure 4.32.
Screen Shot of the Yugop's Shift Project

4.6 Summary and Conclusions

4.6.1 Observations of Contemporary Screen-Based Media

1. Currently the Internet contains the highest number and variety of content genres amongst the six different interactive screen-based media reviewed. Its popularity lies in its accessibility, adaptability and suitability to different types of users, producers and content. These factors will help maintain its presence as the most prevalent interactive medium.

2. Digital and interactive television is the next area of growth for interactive projects. According to the Pace Report 2001, the penetration of digital television in the United States is likely to grow rapidly with an increase in T-commerce, similarly the United Kingdom market will continue to improve its services in light of fierce competition. Additionally, the decision of the British government to discontinue analog television signal by the year 2012 will contribute further to its growth.

3. The direction and future of mobile computing will be dependent on the penetration and growth of 3G technologies. The possibility of converging different types of medium into one physical product will depend on how easily adaptable the content of one medium is to the other. The failure of WAP technology has demonstrated the danger in ignoring these issues.

4.6.2 Observations of Contemporary Screen-Based Design

4.6.2.1 Type as Text and Navigation

1. Text is the most prevalent and frequent use of type in screen-based interactive medium.
2. Navigation is the second most common usage of type.
3. The usages of type as an expressive and experimental element are low. This review was unable to determine if this trend will change in the future. Despite the growing usage of type as an experimental element, its application possibility in current commercial projects is limited due to time and cost factors.

4.6.2.2 Differences between Type-Based and Non Type-Based Projects

1. There is only a slight difference in the quality of typographic application between type-based and non type-based projects. The typography found on type-based projects tended to be more considered and integrated with the overall visual style of

the project. Specifically, the typography on non type-based projects was less successful in its integration with other content elements (such as video, images and animation).

2. There are no differences observed in the usage of type for both groups. The primary usages were text and navigation.
3. Most typographic experimentation occurs in type-based projects.

4.6.2.3 Factors Affecting the Application of Typography in Screen-Based Media

Below is a summary of the three main factors identified from the design review that have influenced typographic application in those projects.

1. **Content**

   Content should be written and organized based on a pre-defined message. The delivery style and length of the text must take into consideration the medium of transmission. It should be written in a clear and concise manner meant for scanning rather than deep reading.

2. **Visual Style**

   The visual design of a project has to take into account a number of factors, primarily its communication objective, target audience, medium of transmission and corporate branding guidelines.

3. **Medium of Transmission**

   The technological specification and the physical interface of a medium will influence both its Content and Visual Style aspects. The technology and tools of a particular medium will shape the design process, output and experience of its content.

CHAPTER 5: THE RELEVANCE AND ROLE OF TYPOGRAPHY IN SCREEN-BASED MEDIA

A survey into the Attitudes and Beliefs of Graphic / New Media Design Educators and Designers

5.1 Introduction

This chapter discusses the findings of a questionnaire survey designed to reveal the opinions of graphic and new media design educators and designers in relation to screen-based typography. It summarizes the methodology used in the collection and analysis of the data, and presents subsequent findings of the survey. This survey was designed to understand how educators and designers view the current role of typography in screen-based media and if they still considered the current framework relevant to the requirements of screen-based media.

5.2 Purpose of the Survey

This survey was conducted to obtain a clearer understanding of issues held by design educators and designers towards the application and role of typography in screen-based media. A by-product of this survey was the identification of potential collaborators or reviewers who might be interested in participating in the next stages of the study. Additionally, the findings helped develop appropriate questions for the next stage.

Specifically, the questionnaire was designed to help answer these research questions:

1. Is typography considered an essential skill in the understanding and practise of new media design?
2. Is print-derived typographic knowledge still relevant for the application of typography in screen-based media?
3. What are the possible directions for the development of future typographic skills?
4. Is the current typographic educational model appropriate for the requirements of screen-based media?
5. How would the different sample groups differ in their views and attitudes towards the issue of screen-based typography?

5.3 Methodology

5.3.1 Questionnaire Design

The questionnaire survey method was chosen for this stage of the study because it 'provides a rapid and relatively inexpensive way of discovering the characteristics and beliefs of a sampled population' (May, 2001, p.89). The questionnaire was designed as an on-line PDF document, which can be accessed through a website. It consisted of twenty-five questions (there were seventeen closed questions, seven classification questions and one open question). An email containing an introduction and short description of the research study was sent to the selected participants[1]. Included with it was an instruction directing interested participants to an URL address where the questionnaire was located. Participants were able to fill in the questionnaire through a web browser and submit it back electronically. The final version of the questionnaire is located in Appendix 4.2. Additionally, detailed discussions surrounding the design of questionnaires, distribution methods, questions types and optimal questionnaire length can be found in Appendix 4.1.

5.3.2 Data Collection

Attitude scaling was chosen as the measurement system for the closed questions. According to De Vaus (2001) and Alreck and Settle (1995), there are four main types of measurement in attitude scaling: rating scales, rankings, checklist and selection between alternate attitude statements. This study used a combination of the rating scales and checklist measurements. The measurement used for rating scales was the Likert Scale[2]. This scale allowed the participant to place him or herself on an attitude continuum for each statement, ranging from 'strongly agree' to 'strongly disagree'. Each category was given weights of 1-5 for scoring purposes, with the 5-scale representing 'strongly agree' and the 1-scale representing 'strongly disagree'. The advantage of this scale is that it tends to be more reliable because of the greater range of answers permitted to respondents (Oppenheim, 1992). Additionally, scales of this type give respondents more scope to express how they feel about a statement (Field and Hole, 2003). The main criticism levelled at them is the lack of reproducibility, as the same score may be obtained in many different ways. There were several reasons why the Likert Scale was chosen for Section A of the questionnaire. They were:

1. Familiarity of sampled population with the rating system. This type of rating system is commonly used in general survey design. Items in the scales are direct and unambiguous for the participant (Edwards et al., 1997).

[1] Where possible, the email was sent directly to the individual's email. However, in cases where individual email addresses were unavailable, the recipient was requested to forward the email to related personnel in the organization.

[2] Further discussions on the different types of rating scales can be found in Appendix 4.1.6.

2. In comparison with other types of rating scales, it is relatively easy to develop and administer (Robson, 2002).

5.3.2.1 Coding

A coding framework was set up to help analyse the responses to the questionnaire. A distinct numeric code was allocated to each variable of a question. This coding process was the first step in preparing data for computer analysis. As Rose and Sullivan explain, 'it constitutes the first step in mapping our observations into data' (1996, p.38). According to May (2001) the answers should fulfil two criteria: they should not only be mutually exclusive but also exhaustive, meaning it should not be possible for someone's answer to fall into two of the categories used (exclusive). He also recommends that each questionnaire be given a specific identification number when it is received.

This coding process went through two stages as described by Miles and Huberman (1994, p.69). First-level coding is a process for summarizing segments of data. This first-level coding took place during the pilot study of the questionnaire and continued during the collection of the real data during the study. Pattern coding was the subsequent process used to group these summaries into smaller sets of themes or constructs. Further discussions on how conclusions were drawn from this process are located in Section 5.3.5.

5.3.3 Data Measurement

May (2001) describes three levels of measurements applicable to the social sciences: Nominal, Ordinal and Interval[3]. The data measurement used in this questionnaire was mostly Ordinal measurement. The Interval measure only related to one classification question (question no. 24), where respondents were asked to state the number of years they have been working in their primary occupation.

5.3.4 Statistical Techniques Used

This study used two main statistical techniques to analyse closed questions. They were descriptive statistics (frequency distributions and means) and inferential statistics (non-parametric test and t-test paired sample correlations). Morgan et al (2004, p.5) provide a useful summary of the types of statistics suitable for different types of research questions in Figure 5.1.

[3] Description of these measurements can be found in Appendix 4.1.7.

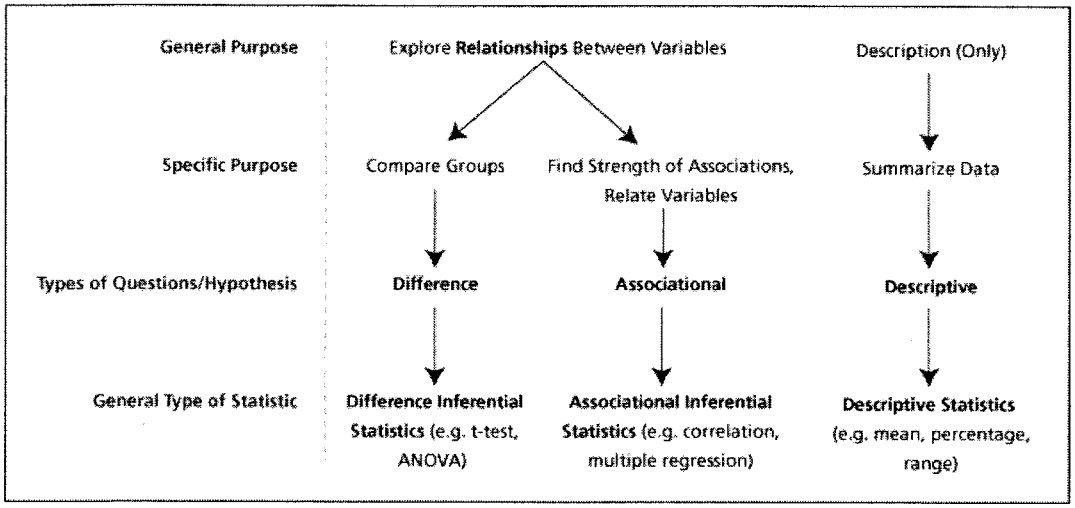


Figure 5.1. Schematic Diagram Showing the Relationship Between the Purpose and Type of Research Question and its Corresponding Type of Statistics (Morgan et al., 2004)

Descriptive statistics 'consist of methods and procedures for presenting and summarizing data' (Sheskin, 2003, p.1). Their results are unsuitable to be used to make predictions. The methods most employed are tables and graphs, arranging scores into groups or classes. This study employed 'frequency distribution' analysis. Reid (1987) stresses the importance of conducting a 'frequency distribution' analysis as it enables the researcher to identify any significant patterns in the distribution of the cases early on and may provide 'leads' for further investigation.

Inferential statistics allow conclusions that extend beyond the immediate data to be derived. Parametric (for example t-test and analysis of variance) and non-parametric tests (for example Mann-Whitney, Wilcoxon signed-ranked and Kolmogorov-Smirnov) are ideal for studies with small sample sizes, as they compensate by making it more difficult to claim statistical significance on a small number of cases (Black, 1999). A non-parametric test is used to compare two independent groups of sampled data where the differences between the populations of the groups are not normally distributed. They are also useful to analyse data relating to attitudes and opinions where data collected are the kind that can be ranked but not easily measured (Keeping, 1995, p.251). The Mann-Whitney non-parametric test looks specifically for differences between two independent samples (Langdridge, 2003, p.441). In the analysis of this questionnaire, this test was used to determine if there were any differences in opinions between the graphic/new media designers, and between design educators/practitioners.

5.3.5 Data Analysis

Closed questions were analysed using the statistical techniques described previously, while open questions were analysed by assigning codes to help organize and quantify the data. The data analysis stages conducted in this study can be described by using Miles and Huberman's (1994) qualitative data analysis model:

1. Data Reduction
2. Data Display
3. Conclusion Drawing and Verification

5.3.5.1 Data Reduction

This component refers to 'the process of selecting, focusing, simplifying, abstracting and transforming' (Miles and Huberman, 1994, p.10) the data collected from the questionnaire. In this initial period, the researcher sets up certain research questions and themes to code the collected data.

The questions was grouped into three main themes:

1. **Relevance** of current typographic knowledge and skills in print and new media
2. **Role and Function** of current and future typography (the way type is being applied)
3. **Education model** for screen-based typography

5.3.5.2 Data Display

All data (from closed, open and classification questions) were organized into different matrices of the main themes in order to view the information in an immediate, accessible and summarized form. The demographic data collected from the classification questions were also included in the matrix to determine the implication of different social, educational and experience backgrounds of the respondents.

5.3.5.3 Conclusion Drawing and Verification

Final conclusions were drawn after going through a series of data selection and data reduction stages. It was also important that the conclusions were verified constantly to ensure their validity. Validity is concerned with the quality of measurement (Rose and Sullivan, 1996). The data was checked against two kinds of validations: internal validity and external validity. According to Robson (2002), if questions are incomprehensible or ambiguous, then this is a problem of internal validity. However, if the sampling is faulty, it will be an external validity problem, as it will affect the level of generalizability in the study.

The research questions were checked at the pilot stage to see if they were supported by the data collected, and also if there was any evidence to verify the level of confidence in the hypothesis statements. However, not all the statements were designed to support the hypothesis. Negative or alternative responses were important because they added variation and depth of understanding to the research questions.

5.3.6 Sampling Method

5.3.6.1 Sampling Technique

The selection of the respondents was made non-randomly. This method is preferred because it is based on a purposive sample (or sometimes called judgement sampling). The criteria for purposive selection are based on studies by Oppenheim (1992), Hall and Hall (1996), Ferman and Levin (1975), and Sekaran (1992). A purposive sample also involves the choice of subjects who are in a position to provide the information required because of their level of knowledge in a particular subject (Sekaran, 1992). This is an ideal sampling method due to the specialist design and typographic knowledge required for this survey. According to Oppenheim and Hall and Hall, a purposive sample relies on the researcher obtaining as wide a representation of individuals as possible in their views and experiences. In addition, Ferman and Levin describe this method to be a logical or 'common-sense' method as a basis for selecting a representative sample of a larger population.

5.3.6.2 Sample Size

There are no set rules on optimum sample size, as this is entirely dependent on the context of the study. Sample size depends on the purpose of the survey, type of population, sampling techniques, statistical tests employed and most importantly on time and resources available (Bryman and Cramer, 2001; Black, 1999). The general view is that the larger the sample size, the less likely it is that a sampling error (differences between the sample and population which are due to sampling) will occur. This study did not anticipate a high sample number due to its purposive sampling and the population size of the targeted sample. As a result, the types of statistical tests conducted were chosen based not only on the purpose of the survey but also on an anticipated small sample size.

5.3.6.3 Sampling Criteria

The sample was divided into two main groups; design practitioners (consisting of graphic and new media designers) and design educators (consisting of graphic and new media design educators). Educational institutions and design practices were sampled and used as a basis for selecting individual participants.

Educational Institutions

The list of educational institutions were selected based on the following criteria:

1. *Student Quality* - Institutions who have consistently produced high quality and award-winning students.
2. *Programme Quality* – Institutions who have achieved high QAA Teaching Quality Assessment scores[4] in the subject of Art and Design.
3. *Influence* – Their historical influence and contribution to the development of graphic design education.
4. *Types of programmes* – Institutions who offered, at the very least, undergraduate degree programmes in the field of graphic design, typography or new media design.

Design Practices and Individuals

The list of design practices were selected based on these criteria:

1. *Creative Quality* - A practice or an individual recognized to produce high quality, award-winning work.
2. *Influence* - The historical influence and contribution (of individuals and the organization) to the development and advancement of the graphic design industry.
3. *Design Activity* – The practice has produced work for either print or interactive media. However, it is common to find that almost all design consultancies have undertaken projects involving both.

The scope of the sample was limited to educators and designers based primarily in the United Kingdom, United States and The Netherlands. These three countries were chosen because they are considered within the profession as having established and reputable design industries and education, and are particularly strong in graphic design and new media. It is also essential to note that English is the primary and secondary language of the respondents, as the questionnaire was set in the English language. In reality, a small percentage of the received responses came from respondents who were based outside of these three countries. This is due to the nature of on-line surveys where respondents may forward the email to persons who they believe to be suitable participants.

[4] Quality Assurance Agency for Higher Education (QAA) was established in 1997 to provide an integrated quality assurance service for UK higher education. Teaching quality assessment is part of an institutional audit conducted by the QAA. Subject reviews take into account curriculum design, content and organization; teaching, learning and assessment; student progression and achievement; student support and guidance; learning resources; and quality management and enhancement.

5.3.5.4 Educator Sample

United Kingdom

The United Kingdom design institution list was compiled based on cross-referencing four different sources:

1. Award winners from the Royal Society of Arts (RSA) student competition (1999-2002)
2. 2001 Research Assessment Exercise (RAE)[5]
3. QAA Subject List Excellence[6]
4. Recommendations from educators based in the United Kingdom

United States of America

The US design institution list was compiled based on cross-referencing two different sources:

1. AIGA[7] Design Program list
2. Recommendations by members of the PhD-Design Discussion List and RIDE (Re-inventing Design Education in the University) Discussion List

The Netherlands

The list of Dutch design institutions was based on cross-referencing three different sources:

1. Art and Design Institutions listed in the European Directory of Institutions
2. Dutch Design Organization (BNO)'s list of educational institutions[8]
3. Recommendations by members of the PhD-Design Discussion List and RIDE (Re-inventing Design Education in the University) Discussion List

5.3.5.5 Practitioner Sample

United Kingdom (UK)

The list of UK design consultancies was based on cross-referencing four different sources:

1. Design Week Top 100 UK Design consultancies 2002[9]
2. Design Week Top 50 Creative Survey 2001[10]

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[5] Available from URL: http://www.hero.ac.uk/rae/Results/. Date accessed: 21 October 2002.

[6] Available from URL: http://www.timesonline.co.uk/article/0,,3501-410295,00.html, Date accessed: 21 October 2002.

[7] The AIGA has over 17,000 members and is the most comprehensive organization representing the profession of graphic designers in the United States. This site has a comprehensive list of all American Universities offering degree level for the subject of Graphic Design. Available from URL: http://www.aiga.org/content.cfm?Alias=design_schools. Date accessed: 21 October 2002.

[8] Available from URL: http://www.bno.nl/en. Date accessed: 21 October 2002.

[9] This list is based on design fees billed through consultancies' UK offices. To ensure that small specialist groups are not ignored, the survey has separate listings for different design disciplines. The disciplines that were selected for the sample are: Print/Literature, Corporate Identity and Digital Media.

[10] This list is compiled on the basis of data submitted by the organizers of key design awards across the world. Each award is assessed according to a point system that Design Week has developed over the past 5 years. Key

3. Award Winners:
    a. British D & AD Annual Awards (2000-2001)
    b. Design Week Annual Awards (2000-2002)
    c. The British Interactive Multimedia Awards (2001-2002)
    d. The Prix Ars Electronica Awards 2002
4. New Media Age Top 100 Interactive Agencies, 2002[11]

United States of America (US)

The list of US design consultancies was based on cross-referencing five different design awards results:

1. Print Magazine Annual Design Competition, 2002
2. AIGA Annual Design Competition, 2000
3. Communication Arts Design Annual (Interactive), 2002 [12]
4. American Centre for Design Annual Design Awards, 2001[13]
5. ID Interactive Media Review 2001[14]

The Netherlands

The list of Dutch design consultancies was based on cross-referencing three different sources:

1. Dutch Design Organization (BNO) – List of Professional Practices[15]
2. Stichting Best Verzorgde Boeken, 2001, 2002 (Best Dutch Book Design 2001 and 2002) (Kuitenbrouwer, 2002; Middendorp, 2003)
3. Apples and Oranges, Best Dutch Design 2001[16] (Staal, 2001).

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awards taken into account are Design Week Awards, D & AD Awards, ID Interactive Media Review, AIGA, BIMA, Design Effectiveness Awards and Bafta Interactive.

[11] According to the New Media Age website, UK agencies were asked to complete a questionnaire about their turnover for the last year, number of staff employed full-time, percentage of new media work, key clients, specialisms, business split and target market. The agencies were then ranked according to their declared turnover. Available from URL: http://www.newmediazero.com/top100/top100list.html. Date accessed: 21 October 2002.

[12] Available from URL: http://www.commarts.com/ca/interactive/cai02. Date accessed: 21 October 2002.

[13] Available from URL: http://www.ac4d.org/events/ev_100show_23rdwinners.html. Date accessed: 21 October 2002.

[14] Available from URL: http://www.idonline.com/imdr01/. Date accessed: 21 October 2002.

[15] Available from URL: http://www.bno.nl/en. Date accessed: 21 October 2002.

[16] This is an annual book published by BIS. The selecting jury comprises of prominent Dutch designers and design critics.

5.3.7 Pilot Study

A pilot study was carried out to test the clarity of the questions and to identify any potential ambiguity in sentence constructions, wordings and rating scales. The pilot testing was conducted in two phases. In the first phase, 2nd and 3rd year graphic and multimedia design students from Northumbria University were asked to fill in a paper version of the questionnaire. The first pilot test identified potential problems such as ambiguous wordings and imprecise instructions.

The second phase was designed to test the delivery mechanism and reliability of the data capturing method. An email was sent to test participants consisting of UK based designers. These participants were selected using the same criteria as the actual sampled population. Respondents were asked to fill in the test questionnaire. The whole process was designed to mimic the real questionnaire, starting from the invitation email, to using the actual design, layout and distribution method of the final questionnaire. This was to ensure that any technical and usability problems that arose during this stage of testing were rectified to ensure maximum response numbers. As a result, key technical problems and ambiguous wordings were kept to a minimum. In both phases, modifications were made where appropriate.

5.4 Respondents' Profiles

5.4.1 Response Rate

The survey was conducted between mid-January and early February 2003. An email survey was sent out to a sample that included educators and designers from the United Kingdom, United States and The Netherlands. 683 emails were sent between the 20th and 24th of January 2003. A total of 171 replies were received with the first mailing. A reminder email was sent out between the 3rd and the 6th of February 2003. As a result, a further 40 replies were received. The final figure of returned and completed questionnaires was 190. The table below lists the breakdown of responses received.

Outcomes	Number of respondents	Percentage %
Returned and completed	190	27.8
Returned but incomplete[17]	16	2.4
Returned but blank[18]	5	0.7
No response	472	69.1
Total number of E-mailed sent	683	100
Final total of valid cases	205	30

Table 5.1. Questionnaire Responses Breakdown

The relatively high number of incomplete questionnaires might be attributed to the nature of on-line responses, where a respondent might have accidentally submitted the form before completion. Any incomplete questionnaire with more than 5 unanswered questions (out of 25 questions) was considered invalid. Out of 16 incomplete questionnaires, only one questionnaire was omitted for this reason, leaving a total of 205 valid cases. There was also an instance where two separate questionnaires submitted were found to be identical. In that circumstance, one of the identical cases was deleted.

[17] Questionnaires returned with one or more missing answers. The respondents have either missed a question or refused to answer.

[18] Questionnaires returned blank without any data.

5.4.2 Occupation Breakdown

A key aim of the survey was to investigate if there were any differences in opinion between educators and designers; and between graphic and new media designers. As the sample size of the different groups were small (less than 100), a non-parametric test was recommended as a suitable method to test for differences between subclasses of the sample (Takona, 2002).

Table 5.2 shows the breakdown of respondents who spend the majority of their time in either design education or practice. Table 5.3 shows the breakdown of respondents who considered themselves either as graphic or new media designers.

Main Occupation	Number of respondents	Percentage of respondents %
Design Practitioner[19]	127	62.0
Educator	48	23.4
Designer and Educator (equal)	13	6.3
Other[20]	12	5.9
Unknown	5	2.4

Table 5.2. Percentages of Design Educators and Design Practitioners Amongst the Respondents

Main Occupation	Number of respondents	Percentage of respondents %
Other[21]	82	40.0
Graphic Designer	59	28.7
New Media Designer	55	26.8
New Media Designer and Graphic Designer (equal)	4	1.9
Unknown	5	2.4

Table 5.3. Percentages of Graphic and New Media Designers Amongst the Respondents

[19] The design practitioner group consist of new media designers, graphic designers, type designers, web developers and non-visual communication designers.
[20] The respondents in this group consist of design students, design writers and artists.
[21] The other types of occupation grouped in this category consist of type designers, design students, non-visual communication designers, design writers, design researchers, web developers and artists.

5.5.Findings

5.5.1 Relevance of Current Typographic Knowledge

Respondents were asked a series of questions designed to reveal their viewpoints regarding the relevance of current typographic knowledge for the practise and understanding of typography in screen-based media. As Table 5.4 shows, there is agreement that current typographic knowledge is still relevant for screen-based typography. However, respondents were less confident on whether current typographic knowledge was able to adapt to the changing role of type in interactive media application.

Relevance of Print-Derived Typographic Knowledge		
Attitude Ratings **Rating ranges from 5 (Strongly Agree) to 1 (Strongly Disagree).**	**Mean Scores**	**Standard Deviation[22]**
A designer's knowledge and experience of using type in the print medium alone is insufficient to compensate for the differences in using type for screen-based media.	3.54	1.11
Current knowledge, views, understanding and application of typography will become obsolete and irrelevant with the maturity of New Media.	1.82	0.99

Table 5.4. Relevance of Print-derived Typographic Knowledge

A set of issues currently affecting the application of type was presented to the respondents. They were asked to rate these issues twice, firstly to consider their relevance to the print medium and secondly to consider their relevance to the screen-based medium. The loss of print-derived typographic knowledge was rated the second most important issue for both media (Table 5.5), reinforcing the view that current typographic knowledge is still considered essential for the understanding and application of typography. Running the Mann-Whitney non-parametric test on the result of this question revealed that graphic designers returned a higher mean score. A significance score of 0.04 confirmed that the results were statistically significant and not brought about by chance variation (refer to Table 5.6). This might indicate that graphic designers see this gradual loss as one of the key factors in the future development of typography, more so than their new media counterparts.

[22] Standard deviation is a statistic that indicates the amount of variability in a score from the mean of the distribution, where a higher number indicates greater variability.

Comparing Issues Affecting the Application of Type In Screen and Print Media				
Attitude Ratings Rating ranges from 5 (Very Important) to 1 (Not Important at All).	**Screen-based medium**		**Print medium**	
	Mean Scores	**Standard Deviation**	**Mean Scores**	**Standard Deviation**
The level of readability and legibility in text	4.37	1.02	4.32	1.09
The gradual loss of typographic knowledge and skills gained from the print tradition	3.99	1.25	3.96	1.35
The level of control the Designer has when text is displayed to the end-user	3.89	1.18	3.78	1.54
Screen display resolution	3.35	1.34	2.42	1.53
The incompatibility of different font formats, for example PostScript, TrueType and OpenType	3.17	1.46	2.85	1.46
The ownership of typeface design	3.00	1.31	3.03	1.36

Table 5.5. Comparing Issues Affecting the Application of Type in Screen and Print Media

Loss of Typographic Knowledge *(Mann Whitney Non-Parametric Test)*			
	Sample Group	**Mean rank**	**Number of responses**
The gradual loss of typographic knowledge and skills gained from the print tradition	New Media Designers	48.35	55
	Graphic Designers	65.20	58
Asymp Sig. (2-tailed) = 0.04[23]			

Table 5.6. Loss of Typographic Knowledge

[23] A score that is less than 0.05 indicates that there is a significant statistical difference between the two groups. A significance test is used to determine whether the results are due to real differences or down to chance. The significance level is usually set to 0.05.

5.5.2 Role and Function of Screen-based Typographic Application

5.5.2.1 Identifying Essential Typographic Principles for Interactive Media

Type as a Communication Element

One of the aims of this study was to investigate how the sampled population rated basic typographic principles for screen-based media. Respondents were asked to rate the importance, on a five-point scale, of a set of statements about the various properties of type presently found in interactive media. The two top-rated properties suggested that type is still considered to be the primary means of communication, reflecting the underlying quality of type – that of giving form and structure to text. This view is supported by the result of Question 15, which asked respondents to rate the role typography plays in enriching the experience of interactive content delivery (shown in Table 5.8). Respondents rated 'communicating textual information' as typography's most important role. In comparison, using type as 'the primary element of visual and emotional expression of the content' was considered to be the least important role.

Despite the views of media theorists such as Kress (2003) and Manovich (2001), that screen-based media affords image rather than text-based content, designers and educators sampled believed that the emergence of new media has not lessened but actually increased the importance of type as a communication tool. However, there was a significant difference between the two main groups tested: designers and educators (practice group). This group was further divided into graphic and new media designers (subject group). The Mann-Whitney test was conducted to confirm this result (shown in Table 5.7). Within the subject group, it was the new media designers who scored higher, whereas in the practice group, it was the educators who returned a higher score. This result suggests that as far as professional practitioners were concerned, new media designers were generally more positive about the increased importance of type as the primary communication tool than their print counterparts. However, as a whole sample, educators indicated a higher level of agreement to the original statement than their practice-based counterparts, based on their higher mean rank scores.

Importance of Type as a Communication Tool *(Mann Whitney Non-Parametric Sample Test)*			
Educators and Designers	**Sample Group**	**Mean rank**	**Number of responses**
The emergence of New Media has increased the importance of type as a communication tool	Educators	104.39	47
	Designers	79.77	125
Asymp Sig. (2-tailed) = 0.03			
Graphic and New Media Designers	**Sample Group**	**Mean rank**	**Number of responses**
The emergence of New Media has increased the importance of type as a communication tool	New Media Designers	65.42	53
	Graphic Designers	43.70	58
Asymp Sig. (2-tailed) = 0.02			

Table 5.7. Importance of Type as a Communication Tool

Readability and Legibility

Readability and legibility are important factors in the design of clear textual communication. Although the volume of research into the legibility of screen text is low compared to that of printed materials, it is nonetheless the most researched area of screen-based typography. Among the studies conducted into the legibility of screen text over the last twenty years include, Mills and Weldon (1987), Muter and Maurutto (1991; 1996), Dillon (1992; 1994), Wiessenmiller (1999), Chandler (2001), Dyson and Haselgrove (2001) and Dyson (2004). The continued interest in this subject suggests that the issue of readability and legibility is very much at the forefront of issues influencing the application and role of typography. This view is supported by the results of the questionnaire.

Further results listed in Table 5.5 also suggested that the issue of readability and legibility are not medium-dependent, as there was minimal difference in their scores for print and screen media. The score for print was positively correlated (0.596) to the score for screen-based media, suggesting a strong relationship between these two variables.

Type as a Visual and Expressive Element

There appeared to be modest support for the use of typography as a primary visual and expressive design element in interactive media. Results from the survey suggest that while screen-based media have created opportunities for typographic application, type continues to function as the

main message conveyor. There was no significant difference in scores between graphic and new media designers, suggesting a homogenous response to this statement.

Type as an Interactive Element

A key difference between print and screen-based media is the increased level of interactivity which websites and interactive television offer to users. Unlike print, where text is static and relies on the reader's imagination to 'interact' with its meaning, hypertext offers the potential to 'redefine the relationship between author and reader and the nature of writing' (Jury, 2002, p.130). Therefore it was surprising to find that the respondents did not rate 'interactivity' as an important aspect in the application of typography. Table 5.8 brings together results from different parts of the questionnaire relating to typographic principles. In the ratings of typographic properties in New Media, 'Type is Interactive' and 'Type is Hypertext' were only rated at positions six and eight respectively, while the role of 'Providing Hypertext navigation links' was ranked fourth out of five. Type, it seems, is still synonymous with text.

Statements Relating to Typographic Principles		
Properties of Type in New Media *Each element is rated against a scale of 5 (Very important) to 1 (Not important at all).*	**Mean for all respondents**	**Standard Deviation**
Type is Communication	4.57	1.34
Type is Reading	4.22	1.19
Type is Visual	3.82	1.21
Type is Expressive	3.68	1.25
Type is Image	3.11	1.30
Type is Interactive	2.91	1.31
Type is Customizable	2.79	1.25
Type is Hypertext	2.65	1.02
Type is Computer Data	2.22	1.33
Typographic Role in Interactive Media *Each element is rated against a scale of 5 (Very important) to 1 (Not important at all).*	**Mean for all respondents**	**Standard Deviation**
To communicate textual information	4.48	0.99
To enhance the visual identity of the message through the choice of typeface, colour and layout	4.03	1.12
To provide textual support to the other communicative elements of the design which include audio, video and animated elements	3.86	1.12
To provide hypertext navigation links	3.52	1.20
To be the primary element of visual and emotional expression of the content	3.20	1.22

Table 5.8. Statements Relating to Typographic Principles

Attitude Ratings - *from 5 (Strongly Agree) to 1 (Strongly Disagree)*	**Mean for all respondents**	**Standard Deviation**
Readability and legibility are still the two most important issues in typography, irrespective of the medium.	4.3	0.90
The emergence of screen-based interactive media (new media) has increased the importance of type as a tool of communication.	3.57	1.21

Table 5.8. Statements Relating to Typographic Principles (continued)

5.5.2.2 Future Directions of Screen-Based Typography

It is widely accepted that the application of typographic knowledge and skills has so far been developed for a print paradigm. Many key issues affecting print are also fundamental issues affecting screen-based media, such as the issue of legibility and readability. In the history of writing, while new techniques have superseded existing ones, it is far more common for a newer technology to replace one major function, leaving the previous technology to consolidate other functions (Jury, 2002). For example, printing did not replace handwriting, and similarly screen text has not taken over the function of books. According to Jury, screen text has evolved to become an alternative medium for communication in the form of email and SMS text messaging. With any new media comes new meaning and possibilities, which have the potential to shape the way typography is applied and understood.

Respondents were asked to judge which screen-based media they most associate with innovative typographic application. 'Television and film title sequence' was rated to have the most innovative and unusual examples of screen-based typography, with websites a close second. This suggested that although the Internet has introduced the element of interactivity and immediacy, the restrictions on type display and delivery speed still limits the creation and delivery of experimental and innovative typography. Title sequence design has the added advantage of being a mature field, having been in development since the 1960s. Designers such as Saul Bass and Pablo Ferro were amongst the pioneers of this medium, creating innovative film titles such as 'The Man With a Golden Arm', 'Vertigo' (both by Bass) and 'Dr Strangelove' (by Ferro). However, the closeness of scores between the 'television and film title sequences' and the 'websites' media indicate that the Internet is becoming increasingly prevalent and popular as a platform for typographic experimentation. Table 5.9 lists the ratings of the other media.

Current Innovative Typography on Screen-based Media		
Ratings of media *Each element is rated against a scale of 5 (Highest association) to 1 (None at all).*	**Mean for all respondents**	**Standard Deviation**
Title Sequence (Television and Film)	3.71	1.20
Websites	3.43	1.35
Advertising (Television and Film)	3.01	1.21
Music Videos	2.57	1.31
Interactive Games (includes PC and console games)	2.16	1.13

Table 5.9. Media Associated with Innovative Screen-based Typography

5.5.3 An Alternate Education Model for Typography

This study has not only been concerned with revealing attitudes and views on the impact of screen-based media for design practice, but also on its impact on design education. This survey was aimed at revealing views regarding the current state of typographic education, and investigating possible directions it should take in response to the demands of the new media. There was general agreement that 'current new media design programmes placed less emphasis on the knowledge and history of typography' (refer to Table 5.10). However, respondents were less certain on the advantage of introducing a separate curriculum. There was no significant difference in scores between designers and educators.

Views on Current and Future Typographic Education		
Attitude Ratings *Rating ranges from 5 (Strongly Agree) to 1 (Strongly Disagree).*	**Mean for all respondents**	**Standard Deviation**
Current new media design programmes place less emphasis on the knowledge and history of typography.	3.77	0.83
There should be a separate curriculum developed specifically for interactive screen-based typography in new media design education.	3.41	1.10

Table 5.10. Views on Current and Future Typographic Education

5.5.4 Development of An Alternate Framework

There was broad support for the view that the application of typography would become more sophisticated as screen-based media mature. The direction of this development will be the subject of examination in the next phase of this study. However, the results of the survey have managed to clarify possible directions for the development of an alternative framework.

Respondents were asked in an open-ended question (Question 19[24]) if they thought that their profession would benefit from the development of an alternative framework designed specifically for the interactive screen-based medium and, if so, which area would they suggest the framework concentrate on. A total of 140 different comments were recorded. Content analysis (Weber, 1990) was used to analyse these comments in a more systematic manner. The answers were divided up

[24] Question 19 asked: 'Current knowledge and principles of typography have centred mostly on the medium of print. In your opinion, do you think the profession will benefit from an alternative framework designed specifically for the interactive screen-based medium? If so, which area would you suggest the framework concentrate on?'

based on their association with the first or second question. Recurring themes were identified and collapsed into a number of factors. This allowed a frequency analysis to be carried out.

5.5.4.1 Would The Profession Benefit From An Alternative and Medium Specific Typographic Framework?

Comments were divided up into three groups: 'Positive' responses, 'Negative' responses and 'Unsure'. A total of 71 out of 140 comments referred to the first part of Question 19. As Table 5.11 shows, the majority of the comments supported the development of an alternative framework. However, opinions differed on which knowledge and subject area the framework should concentrate on. These differences in opinion were further analysed in the second part of the question, which explored what key issues should be considered in the development of the framework.

Is an Alternative Framework Beneficial to the Profession?		
Response Groups	**Number of comments recorded**	**% of comments recorded**
Positive	50	70.4
Negative	17	24.0
Unsure	4	5.6

Table 5.11. Content Analysis Results Regarding the Introduction of an Alternative Framework

5.5.4.2 What Key Issues Should Be Taken Into Consideration For The Development Of The Framework?

For this analysis, a total of 117 out of the 140 collected comments were used. The remaining comments did not address the issue above and thus were not included in the content analysis. These comments were analysed by identifying thematic units (Krippendorff, 1980) and were subsequently grouped into seven categories. A frequency analysis was then carried out (see Table 5.12). The top two issues referred to were the creation of a medium-independent framework and inclusion of communication-focused issues such as legibility, readability and usability.

Areas of Focus for an Alternative Framework		
Factors relating to issues considered essential to the development of the framework	**Number of comments recorded**	**% of Comments recorded**
Medium independent (Inclusive) framework Typographic principles are common to both kinds of media Building on existing knowledge in print typography- An 'Extended' rather than 'Alternate' framework	35	29.9
Communication - Legibility and readability - Usability - Accessibility - User Navigation - Information processing	34	29
Concentrate on the characteristics of the new media such as: - Interactivity - Time-based / motion	16	13.7
Technological Issues of new media – Limitations and possibilities	14	12
The Application of Type in Different Screen-Based Media	11	9.4
Medium dependent (Exclusive) framework Knowledge and skills for both media as separate and independent. The medium is unique and different from print.	4	3.4
Multi-disciplinary influence to the framework	3	2.6

Table 5.12. Content Analysis Identifying Focus Areas in the Development of the Framework

5.6 Summary and Conclusions

5.6.1 Principles of Typography are Crucial and Relevant

There is a general acknowledgement and awareness that screen-based media brings its own nature, characteristics, freedom and constraints. However, most respondents believe that print-derived knowledge, history, tradition and skills of typography are still crucial to the understanding and development of typography. Whilst the profession of typography may have been shaped by print technology, ultimately the primary role and function of typography is to communicate a message. In particular, the issues of legibility and readability remain important issues for educators and designers alike.

5.6.2 Typography as the Preferred Mode of Message Conveyer

There was less support amongst the respondents for type becoming a more visual or interactive element than first perceived. This result was somewhat surprising considering the viewpoint of media theorists (see for example Kress, 2003; Bolter, 2001; Manovich, 2001) that screen-based media affords the application of image-based content over text. Analysis of responses to Questions 12 and 19 showed that despite the shift to more image-based content, designers and educators are keen to focus on the denotative communication value of text. Perhaps it is a reaction towards a proliferation of image-based content in screen-based media or perhaps the recognition that text and image have very distinct roles in the communication of a message.

5.6.3 A Typographic Education Model that is Independent of Medium

The majority of respondents agreed that although current new media design programmes placed less emphasis on the knowledge and history of typography, they were undecided if there should be a separate curriculum developed specifically for screen-based type. However, judging from their responses to other sections of the questionnaire, it was clear that most would be in favour of a typographic education that began with teaching the fundamentals and history of type before moving on to the specific characteristics and limitations of different media. This approach is in keeping with the current model of design education in the UK, where specialization of a subject would occur at a latter stage of an undergraduate programme. However, the difference between a medium-independent model proposed by this study and the current model is the focus on key differences between media, and understanding how these differences affect the application of typography.

5.6.4 No Philosophical Divide Between the Four Main Sample Groups

Contrary to what the study initially hypothesized, there was no marked difference in opinions between designers and educators; and between graphic and new media designers. Perhaps this is because a majority of design educators are still designers, and thus not far removed from issues affecting the practice of new media. It is also common for designers to practise in both print and screen media. These two points may explain the more homogenous responses collected in this survey. It also provides an interesting insight into the relationship between practice and education in the visual communication field. It suggests a closer relationship between the world of design profession and design education, and dispels a common assumption that the field of design education is disconnected to the changing nature of the design profession.

5.6.5 An 'Extended' Rather Than An 'Alternative' Framework

There was wide support for the development of an alternative framework for screen-based typography. The most common view was that it should not be dependent on the medium of transmission, but instead should focus on the fundamentals of typographic knowledge, skills and functions. To quote one respondent, 'the knowledge and principles of typography regarding legibility, readability and choice of typeface for expressive as well as technical purposes are, in my opinion, as applicable to screen-based type as they are to print.' Lessons learnt in print should not be forgotten, but rather applied sensibly and appropriately in a manner that suits the purpose of the message as well as the medium. Rather than an 'alternative' framework, perhaps it is better to address it as an 'extended' framework in which existing knowledge needs to be appropriated and adapted to the context of screen-based type application.

In addition, analysis of the responses to Question 19 suggested that the framework should facilitate designers to develop a wider, more multi-disciplinary approach to new media in general. For example, one respondent suggested that the framework should 'begin to incorporate ideas and techniques from filmmaking'. The importance of time-based elements found in filmmaking was further echoed by another respondent stating, 'the essence of interactive media is time, something only imagined in the crudest way (eye tracking and page turning) in print'. In conclusion, motion, interaction, communication, information and usability studies were the subjects identified from the survey that could be considered important elements towards the development of new knowledge for this framework. As a result, the next research stage (see Chapter 6) was used to explore in further detail the suitability of these external subjects for inclusion in the framework.

CHAPTER 6: INFLUENCING FACTORS ON THE APPLICATION OF TYPOGRAPHY IN SCREEN-BASED MEDIA

In-depth Interviews with Cross-Disciplinary Experts

6.1 Introduction

Previous research stages have so far reaffirmed the current relevance of typographic principles for screen-based media, and strengthened the notion that, despite a shift towards a more visually led culture, type remains the preferred mode of communication in screen-based media due to its denotative quality. This study has identified the need for a medium-independent framework, and now requires more in-depth exploration and identification of issues surrounding screen-based media. Semi-structured interviews were conducted at this stage to allow the study to draw knowledge from a pool of cross-disciplinary experts. The experts' viewpoints have helped identify key factors that will influence the development and application of the framework. This chapter summarizes the methodology used in the analysis of the interviews and presents its subsequent findings.

6.2 Purpose of the Interviews

The interviews were designed to explore key findings of the previous questionnaire survey (see Chapter 5) in detail, particularly in defining an appropriate approach, structure and focus for the typographic framework. One of its main aims was to identify factors that would influence the development and application of a new typographic framework. Additionally, the survey aimed to identify key design skills required for a screen-based environment. This would help create a contextual understanding between typographic skills and other design skills (such as visual, conceptual and technology skills). Furthermore, the role of typography was discussed in order to understand how contemporary influences (social, political, economical, technological) would shape its future.

In summary, the purpose of these interviews was to:

1. Identify factors that will influence the development and application of a new framework
2. Explore the required design knowledge and skills for future screen-based media
3. Understand where typographic skills fit within this new knowledge requirement
4. Define the role of current and future typography

6.3 Methodology

6.3.1 Survey Design

6.3.1.1 Choosing the Survey Method

In order to advance the purpose of this survey, a review of appropriate research methods was conducted. This began with the exploration of the interview method. Interviews as described by Robson (2002) are conversations with a purpose. Interviews are useful to provide data on understandings, opinions, actions and feelings. Furthermore, they can be used to explore features of situations and events, and uncover beliefs of individuals or sub-cultures (Knight and Arksey, 1999). According to Cannel and Kahn, as cited by Cohen and Manion (1989, p.307), interviews are conversations 'initiated by the interviewer for the specific purpose of obtaining research-relevant information and focused by him on content specified by research objectives of systematic description or explanation'.

Robson (2002) discusses the advantages and disadvantages of interviews. Interviews offer the interviewer the opportunity to modify the line of enquiry depending on the answers of the participants. It allows the interviewer to probe for more detail or clarification. Compared to questionnaires, conducting interviews suggest to the participant that their views are particularly valued. However, interviews are also time-consuming for both parties. Arranging an interview requires constant communication and coordination with the interviewee. Once an interview is completed, tapes have to be transcribed and notes written up immediately. Traveling to and fro to conduct a one-to-one interview is also costlier than using other survey methods, such as a self-administered questionnaire (Knight and Arksey, 1999).

6.3.1.2 Interview Type

There are several types and styles of interviews. Robson (2002) describes three main styles: fully structured, semi-structured and unstructured interviews. A fully structured interview has predetermined questions, in a pre-set order. However, in a semi-structured interview the order of the questions can be modified based on the situation. Additionally, wording can be changed and explanations given if required. In comparison, an unstructured interview is generally informal, allowing the conversation to develop within the area of concern. It was decided that semi-structured interviews would be the most appropriate method to use for the purpose of this survey. The semi-structured interview was chosen because it allowed a certain amount of flexibility for the interviewer to modify the order of questions based on responses, while still adhering to a set of questions prepared as a guideline in advance. The questions asked in the interview were all open-ended.

6.3.1.3 Interview Delivery

A few key factors were considered during the design of the interview. The interviews were conducted remotely through an online network. This was due to the geographic locations of the participants. They were based not just in the United Kingdom, but also in Europe and North America. Conducting interviews online was the most cost and time-effective method. Determining the validity and suitability of this method was an important step in justifying this decision. For this purpose, the possibilities and limitations offered by Computer Mediated Communication (CMC) were explored. Mann and Stewart (2000) listed four main factors to consider when evaluating the advantages and disadvantages between conventional and online methods of interviewing.

Cost

Costs for conducting online interviews are much lower than face-to-face interviews because there is no travelling cost involved. This was a major advantage, especially considering that the chosen participants were based around the world. Because the targeted participants were considered experts in their respective fields, it was important that they were not excluded due to their geographical location.

Time

Time involved in travelling to and from an interview is cut considerably. The interviewer only has to set up a workstation to conduct the interview when it is required. However, researchers may have to spend more time in trying to solve technical problems before the implementation of the interviews (Couper et al., 1999). In this study, the software application used to 'chat' (discussed in Section 6.3.4.3) with the participants had to be tested out to ascertain its reliability and ease of use.

Reach (sampling issues)

An online interview assumes that the participant has access to the Internet and is computer literate. This study assumed that it would be extremely rare for a practising designer or educator to be IT illiterate. Nonetheless, it was established at the beginning of this study that all selected participants have access to the Internet and were familiar with some form of CMC, namely emailing. This was established by searching for the participants' email addresses, assuming that the presence of an email address would indicate a minimal level of IT literacy. The technical ability of the participants did not affect the selection process, nor preclude any possible participants. For a more detailed description of the issue of sampling, please refer to Section 6.3.3.

Anonymity

The issue of anonymity is sometimes considered important due to the nature of some forms of qualitative research. The ability for someone to be anonymous during an interview may be more achievable with online interviewing. Gunter et al (2002) suggests that online research may be more effective in addressing sensitive issues, and participants may be more willing to reveal intimate details than when being interviewed face-to-face. Gunter et al illustrate this point through Moon's (1998) research, where he found that participants were much more willing to reveal personal information when completing a computer-mediated survey. This issue, while important, did not have such a crucial bearing on this survey because the nature of the enquiry did not directly touch on sensitive or personal issues. The participants were assured of their anonymity; however, they were given the option to be credited if they so wished.

Possibilities and limitations

Having compared conventional and online interviews, it is now time to consider the possibilities and limitations of online interviewing. One of the major advantages of conducting a face-to-face interview is that the interviewer can be a 'marvelously smart, flexible instrument that can respond to situations with skill, tact and understanding' (Seidman, 1993, p.16, cited in Mann and Stewart, 2000). The interviewer will be able to build a rapport with the interviewee, and will be privy to the subtlety of body language. As Fontana and Frey (1994) state, the generation of data in qualitative interviews depends upon developing a rapport with participants. Apart from body language, other information can be gathered by observing the way the participants dress, their general mood and their confidence levels. Crucially, the 'oral dimensions of language (pitch, tone and so on) might identify whether what was said was spoken from a position of confidence, doubt, irony and so forth' (Mann and Stewart, 2000, p.126). Could these skills be transferable to an online interview? There are mixed views on this debate. Some research points to CMC as being impersonal and distancing (Hewson et al., 1996; Kiesler et al., 1984). However, Mann and Stewart (2000) argue that warm relationships can and do develop online, citing Walther's (1992) review of non-experimental studies of CMC as evidence. This supports the view that personalities do transcend technological environments and can be conveyed effectively (Galegher et al., 1998). Furthermore, the Instant Messaging or Chat Room methods provide interactivity and immediacy, which help in giving participant and interviewer an immediate sense of the other (Colomb and Simutis, 1996). To help overcome this problematic rapport building, O'Connor and Madge (2003) attempted to build a relationship between their participants by posting their biographies and pictures up on their project website. This provided the participants with a 'visual image and contextual information' of the researchers. Additionally, they established further links through e-mail communication, which they used for arranging interview dates and time.

A consequence of conducting the interview in a written rather than spoken format was the advantage of not needing to transcribe the interview. This is a major time-saving benefit and, as long as the researcher is careful in saving the content of each interview, transcription error will be eliminated.

6.3.2 Interview Content

An interview guide[1] was prepared for the interviews. Knight and Arksey (1999, p.97) describes it 'as a framework for the main body of semi-structured interview, and is based on key questions that the study is addressing.' The guide contained open-ended questions with the aim of encouraging communication and elaboration on the interviewee's part. As the interviewer, my role will be to prompt and probe in order to seek further elaboration and clarification. Apart from guiding the interview, the questions, which were already in a digital form, enabled me to 'copy and paste' questions quickly into the chat messaging software during the interview. This method reduced the time spent retyping questions, and ensured all key questions were consistent in their wording.

The interview was divided into five sections. They consisted of:

1. Introduction and background: Introducing the PhD research and stating the aim of the interviews
2. Typographic understanding and knowledge (print and screen)
3. Role of screen-based typography
4. Typographic framework development
5. Framework building blocks

Introduction and Background

The first section was mainly to familiarize the interviewee with the subject of the study and at the same time to establish a rapport with him/her. This section contained information on the purpose of the interview, anticipated outcomes and rules of confidentiality. It also informed the interviewee of the range of topics to be covered. A recommended method for putting the interviewee at ease is to begin by asking 'easy-to-answer' questions, such as a factual situation or the background of the interviewee (Knight and Arksey, 1999). In this particular case, the interviewees were asked about their current occupation and then encouraged to elaborate on their current work.

[1] This guide can be found in Appendix 5.1.

Typographic Understanding and Knowledge

This section was designed to reveal the level of knowledge the interviewee had on the subject of typography. This was important because not all participants had design and typographic expertise. For example, a Communication Studies lecturer may not have the same level of typographic knowledge or interest as a design historian. Asking the participants to elaborate on their knowledge of typography permitted me, as the interviewer, to gauge their level of specialist knowledge, as well as ensuring that we were addressing the same issue when using the terms 'typography' and 'type'. Having an agreed definition of the main subject of discussion was important to ensure that there was no vocabulary misunderstanding.

Role of Screen-based Typography

One of the key purposes of the interview was to find out the possible role typography would play in screen-based media. Understanding the contributing factors affecting this topic is crucial to the development of the typographic framework. In this section, the interviewee was asked to respond to the study's findings from the questionnaire survey, which revealed that 'type is the designer's preferred mode of communication'. They were asked to speculate on whether they thought this role might change in the future. This section also explored factors that would influence how type is understood and practised in screen-based media.

Typographic Framework Development

Previous stage findings from this study had identified two key issues that were to have an effect on the development of the typographic framework. The first issue concerns the activity of appropriating existing knowledge from external disciplines, such as time and motion based subjects. The second issue concerns the identification of medium-based (specialist) and discipline-based (global) knowledge for the framework. Interviewees were asked to comment on these two issues and were encouraged to discuss any additional issues they considered absent from the framework.

Framework Building Blocks

This study identified two specialist knowledge areas required for the framework: Hypertext Theory and Interactivity. Interviewees were invited to comment on the inclusion of these two subjects and their relevance to current new media concerns. They were also asked to define the concept of 'interactivity' and how they view its importance (or unimportance) in the consideration of the framework. These discussions were designed to test the relevance of key characteristics of screen-based media to the development of the framework. This would help determine the balance required for medium-based knowledge and discipline-based knowledge.

6.3.2.1 Subject Specialist Knowledge

In total, seventeen questions were prepared for the interviews. These questions were consistently asked in all interviews. However, in two interviews, additional subject-specific questions were asked regarding Hypertext Theory. These two interviewees had very specific specialist knowledge in this area, and this was a good opportunity to invite them to elaborate on areas concerning the usage of typography in the development of Hypertext systems. The additional information collected was not used as a comparative study between the other case data, but rather informed the development of the theory during the data analysis stage.

6.3.3 Sampling Criteria

The selection of the participants was based on purposive sampling. The principle of purposive sampling is based on the researcher's judgement relating to typicality or interest (Robson, 2002). A purposive sample relies on the researcher satisfying his/her specific aim of the project. Numbers for this type of sampling are typically small (May, 2001). In this research stage, the number targeted was between eight to ten participants. A purposive sample involves the choice of subjects who are in a position to provide the information required because of their level of knowledge in a particular subject (Sekaran, 1992). This point was an important attribute due to two reasons. The first related to the cross-disciplinary nature of the questions. These questions were designed to elicit the views of individuals who represented a range of knowledge bases relevant to screen-based media. Secondly, this study posits that the construction of an alternative typographic framework requires the influence and knowledge gained through disciplines which reflect characteristics of screen-based media. As a result, the sampling criteria were decided on the basis of subject expertise rather than on the ability to attribute findings to a general population.

Five related disciplines were identified and targeted. They were:

1. Interactive Design
2. Design and Media Theory
3. Digital Typography
4. Hypertext and Communication Media
5. Interactive and Time-Based Art

Interactive Design

This group comprises specialists who have extensive experience practising Interactive Design. Individuals from this group may or may not have a design background. Some current leading practitioners in this field started out as technical consultants before focusing on design consultancy.

Design and Media Theory

This group consists of individuals who have written and researched widely in fields such as Communication Design, Typography and New Media. They are typically educators and researchers whose views are influential and well-known.

Digital Typography

This group comprises individuals who practise and develop typography specifically for the digital medium. A key characteristic of their work takes into account the interactive and time-based nature of the medium.

Hypertext and Communication Media

This group consists of individuals who have written extensively in fields such as Hypertext and Communication Theory. They are typically educators and researchers whose theories are influential and well known.

Interactive and Time-Based Art

This group includes individuals who practise, teach or write about digital and time-based art.

Individuals fitting the above criteria were short-listed based on:

1. Literature search and review on the individual discipline areas
2. Suggestions from my subject and external supervisors
3. My professional knowledge and expertise (as a practising designer) in these subject areas

6.3.4 Data Collection

6.3.4.1 Pilot Test

Two test interviews were carried out. These tests were used to assess whether the questions were unambiguous and relevant. As the majority of the interviews would be conducted on Instant Messaging (IM) software, the two test interviews were conducted using the same method. Due to time constraints, the pilot study was only able to conduct the test with two participants from the Interactive Design discipline.

The main findings from the pilot test concluded that the number of questions far exceeded the projected time of the interview. The interview was designed to last between forty-five to sixty minutes. However, due to the number of questions and the time required to type in the responses, both interviews overran by thirty minutes. As a result, the interview questions were

revised and the number of questions shortened by removing repetitious or peripheral questions. For example, three peripheral questions were removed from the *Typographic Understanding and Knowledge* section as they only served to validate the answers given to the main question in this section. The pilot test also identified the importance of the interviewer's role in controlling the flow and focus of the conversation, ensuring that the interview finished within the allotted time. Both test participants commented that the questions were clear and logical, though one mentioned that the term 'interactivity' needed to be defined or clarified. This led to an additional question in Section 5 of the interview, requesting the interviewees to define their concept of 'interactivity'. The pilot tests were also useful in identifying any technical or usability problems with the IM software. Generally, these problems were not encountered during the pilot tests.

6.3.4.2 Invitation for Participation

Personal emails were sent to twelve selected individuals at the beginning of June 2003. The selected participants were sent an introductory email to request their participation in the interview. I began the email by introducing myself and went on to give details of the research project. I described the aim of the survey and explained why they have been selected to participate. In addition, an Interview Q & A fact sheet was attached to the email in order to provide additional information on the interview process. It contained information on the interview length, structure, method, type of questions, proposed dates and terms of confidentiality. The email also included the contact email of my principal supervisor to allow participants to check the validity of this interview request.

Email correspondence was carried out with interested participants to confirm a suitable time, date and interview method. These email correspondences were important rapport-building opportunities. This was particularly significant because the opportunity to create trust and rapport in a face-to-face manner using facial expression and appearance is unavailable in online interviews.

Twelve introductory emails were sent out. Six participants returned a positive reply and six returned a negative reply. A further eight emails were sent out to a secondary list of participants. Similar sampling criteria used to draw up the first list of participants, were applied. From this, a further three replies were positive.

6.3.4.3 Conducting the Interviews

To ensure that the participants were comfortable with the technology used to conduct the online interview, they were given a choice of three interview formats. The interviews could be conducted using:

1. Instant Messaging Software (IM)
2. Web chat
3. Synchronous email

This study was careful to select a range of formats that are easy, reliable and unobtrusive to use. In addition, there had to be enough similarity between the formats to ensure that the data collected in the interviews could be compared accurately. Each format was reviewed to check against any undue difference in perceptions and responses to questions.

Instant Messaging Software

Instant messaging (IM) is a form of electronic communication that allows immediate correspondence between two or more users who are online simultaneously. This format is considered to be faster and more reliable than an external chat application hosted on a website. However, its main disadvantage is that it requires software installation on the participant's local machine. Two types of IM were given as options: AOL Instant Messaging® and MSN Messenger®. These two options were chosen because at that time, they were two of the most popular Instant Messaging chat software. In the end, a total of six interviews were carried out using this format.

Web Chat

This is a chat application hosted within a website. This format does not require any software installation. However, it is less stable, resulting in possible data loss if the application fails or quits suddenly. Additionally, there is no facility to automatically save the transcript of the conversation. As a result, I had to be vigilant and ensured that the interview transcript was constantly saved onto an external document. Depending on the traffic of the host server, the response time between user input and screen display could be delayed. Due to these disadvantages, this format was only used as a secondary option if a participant rejected the use the Instant Messaging format. In total, two interviews were carried out using the web chat format.

Synchronous Email Conversation

This format involves sending the participant a list of interview questions and requesting a response within 24 hours. It differs from the first two formats in terms of time differences between responses. Whilst it may lose out in terms of spontaneity, steps were taken to ensure that it closely resembled the process employed in the first two options. This involved making sure that the email correspondences between the participant and myself were limited to a one-day period. This meant that once the first response was received, I had to send further questions as soon as possible. Depending on the answers given and issues raised, this conversation might continue for two to three more emails. Because of this temporal difference, this was the least preferred format and was only used when the participant rejected the first two options. Only one interview was carried out using this format.

6.3.5 Data Analysis

The open-ended questions were analysed qualitatively. In these types of questions, there is usually an emphasis on a search for meaning and understanding in the data (Knight and Arksey, 1999). Tesch (1990, p.58) distinguishes twenty-six different approaches to qualitative research, which she then reduces to four basic groupings:

1. The characteristic of language
2. The discovery of regularities
3. The comprehension of the meaning of text or actions
4. Reflection

According to Tesch (1990), this list corresponds to a progression from a more structured to less structured approach to research design. This survey's aim and design lends itself to the third approach (the comprehension of the meaning of text or actions). To analyse data using this approach, grounded theory was employed. Grounded theory is concerned with 'the discovery of theory from data' (Glaser and Strauss, 1967, p.1). According to Strauss and Corbin, the grounded theory approach 'is a qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon' (1990, p.24).

The development of grounded theory has diverged into two separate camps, with Strauss and Corbin (1990) focusing on a more structured methodology and Glaser opting to focus on reducing preconceptions and encouraging more open-ended discovery of theory. At the core of Strauss and Corbin's method is the 'paradigm model' (1990, p.99) which suggests that the researcher look for causal relationships between context, conditions, actions/interactional

strategies, intervening conditions and consequences. Glaser was critical of this model as evident from his comment:

> If you torture the data long enough, it will give up! This is the underlying approach in forcing preconceptions of full conceptual description. The data is not allowed to speak for itself as in grounded theory, and to be heard from, infrequently it has to scream. Forcing by preconception constantly derails it from relevance. (1992, p.123)

This study is mindful of the differences in these two approaches and although it found Strauss and Corbin's formalized technique useful during the initial design of the survey, it has adopted the Glaserian version as an overall approach in its data analysis. This study embraces Knight and Arksey's view that:

> The development of a grounded theory involves constantly searching, comparing and interrogating the first few transcripts to establish categories that address the research questions, that are mindful of the research literature, and which will allow the greatest amount of data to be coded without either forcing them into categories or having categories that are so sprawling as to be virtually meaningless. (1999, p.162)

The cycle of data analysis and data collection serves to refine the final categories with the data that is emerging. Links between categories are explored, modified and interpreted to seek out emerging concepts and theories. Using this method the researcher is constantly finding, analysing and theorizing against the data collected to arrive at a conclusive theory.

To facilitate the analysis of data using the grounded theory method, software program QSR N6 NUD*IST (Non-Numerical Unstructured Data Indexing, Searching and Theory-Building) was employed. This software is described as a tool kit based on coding text documents such as interview transcripts and field notes (QRS International, 2002, p.2). It facilitates the task of analysing and exploring the codes by allowing the easy collapse and reorganization of categories.

6.3.5.1 Collecting and Coding the Data

A total of nine semi-structured interviews were conducted. Despite repeated effort, the study was unable to elicit any participation from the discipline of Interactive and Time-Based Art[2]. The final list of participants and their respective disciplines is listed in Table 6.1.

Discipline	Number of Interviewees
Interactive Design	2
Design and Media Theory	2
Digital Typography	3
Hypertext and Communication Media	2
Interactive and Time-Based Art	0

Table 6.1. Interviewees' Domain of Knowledge

The interview transcripts were imported into the NUD*IST software as individual case studies. Samples of three complete interview transcripts are located in Appendices 5.2 to 5.4. Reviewing the first few transcripts enabled the identification of initial themes. These themes were categorized and checked against the new case data for adequacy. The creation of these categories was guided by the data, as well as the literature review and the overall research objective. Knight and Arksey (1999, p.163-164) list six questions that emerging categories should be checked against. These questions are summarised below:

1. Do the categories cover all the data that are relevant to the research aim?
2. Are new categories needed?
3. Do existing categories need to be split up into sub-categories?
4. Are there too many categories which overlap?
5. Do the existing categories need to be reviewed?
6. Are there categories that are suggested by the literature which are not being used, and which ought to be applied to the data?

Once the data had been coded, the categories were then grouped to form a conceptual framework, which enabled meaning to be derived from the data. At this stage, the categories were grouped and regrouped in order to explore different possible conceptual meanings and relationships.

[2] This failure could be attributed to a few possible factors. One reason could be down to bad timing, as some participants who were contacted were unable to participate due to their heavy workload. Some participants were also reluctant to participate due to the belief that they could not contribute to the topic of typography.

6.4 Findings

6.4.1 Current Web-Based Typography

Participants were asked to comment on the state of typography currently found on the World Wide Web. Six general themes emerged from their responses. They commented that screen-based typography is:

1. Improving, though still seen as primitive when compared to print typography
2. Less experimental
3. Mostly function-based as opposed to image-based
4. Ill-considered
5. Ephemeral
6. Based on a print model

Although web typography has improved a great deal in terms of readability and accessibility, there was general consensus that it was still regarded as primitive when compared to its print counterpart. Two possibilities were put forward as probable reasons for this situation. The first is attributed to the de-professionalization of digital and graphic design in general. Technology has allowed a specialized profession such as typography to be practised by many non-professionals. This has created a fragmented and eclectic medium, where an increasing number of non-designed sites emerge alongside designed sites. This results in a fragmented and slower progression towards an improved understanding of typography, as designers and non-designers come to terms with the limitations of the medium.

A secondary cause relates to the technology available. Whilst technology has encouraged the democratization of web publishing, it has also introduced its own limitations. The lack of typeface choices in system fonts was often mentioned in the interviews as a constant stumbling block to the enhancement of screen-based typography. The appearance of type is dependent on the user's system fonts and display quality of the screen. As a result, the subtlety and sophistication of typographic forms are lost. The introduction of higher resolution screens such as one developed by Xerox could help remedy this problem, though it remains to be seen if this concept will be adopted. An additional factor to consider is the introduction of a paper-like screen (described by one participant as 'clever ink particles'), currently being developed by an American company called E-Ink (www.eink.com). This works by electronically arranging thousands of tiny black and white capsules to form characters. The screen is only as thick as three human hairs and is flexible enough to be rolled up like a newspaper. Its display technology has been used in Sony's recently released E-book device at the 2006 Consumer Electronic Show in Las Vegas (Hermida, 2006). Meanwhile, Gyricon's SmartPaper is a similar product being developed by Xerox. Both of these

companies are looking to target different usages of electronic paper. E-Ink is looking to target the cell phone, e-books and e-newspaper market, while Gyricon is looking to concentrate on making electronic portable store signs (Kharif, 2002).

Considering the interactive possibilities offered by screen-based media, current examples of web-based typography were regarded by some participants to be less experimental than other design elements. Designers tend to experiment more with animation, video, sound and imagery. Participants also suggested that the majority of screen-based type is functional rather than image or visual-based. Although this statement could be applicable to print typography, the difference is seen in the balance of usage between these two roles. This is supported by the previous questionnaire survey findings, which indicate that designers are predominately concerned with issues of legibility and readability of screen-based type. This overriding concern may have contributed to a less explorative approach to typographic design on the web. The clarity of information delivery constrained by technological limitations remains the overriding problem for designers to overcome. This concern will continue until the current generation of designers has learnt to look beyond the 'messenger', and to concentrate more on the 'message'. It will then shift from a technological to a communication-focused issue, where the nature and purpose of the message will determine the application and usage of type. As one participant puts it: 'It's really more an issue of writing!'

Screen-based typography is considered to be more ephemeral in relation to the participants' idea of permanence, normally associated with print typography. This medium is characterized by digital data, which can be transformed, moved or deleted at any moment. The fixity of the word can no longer be assumed because the authority of the singular author has diminished. For example, Wikipedia (2006) is a free online encyclopedia that is written collaboratively by its readers. Projects such as Wikipedia exemplify this multi-authorial and collaborative approach, which is only possible due to the emergence of a connected digital media.

Unsurprisingly, some participants felt that current application of web typography still uses print-based conventions. The layout and structure of web content is still dominated by a print paradigm. This deference to the print medium is expected, as it is an obvious comparative medium to draw from. However, participants also acknowledged that as the medium matures and the influences of more time-based media such as film begin to filter through, the dependence on print conventions would eventually recede.

6.4.2 Influencing Factors on the Practise and Application of Screen-Based Typography

In trying to identify how the practice and application of typography will change in screen-based media, it is perhaps appropriate to first identify factors which will affect this change. Below are factors which have emerged from the analysis of the interviews.

6.4.2.1 Technology

A strong and recurring theme which emerged from the interviews suggests that many issues regarding new media are technology-related. Typography it seems is no exception:

> Typography has always been a technology problem. It's about using the widget of the year in such a way that the eye and brain find the end results useful to look at. *(Digital Typographer 1)*

It is inevitable that technology should be the main concern with regards to new media. However, one participant remains sceptical regarding the level of importance attached to technology:

> Technology has developed so rapidly even in the time I've been interested that certain details are already redundant. It's a case of seeing the wood for the trees, or some other such platitude. It is the opportunities offered that matter not really the origin of those opportunities. Whilst I agree that understanding these origins can, in principal, liberate our minds to take advantage of it. As I said before though, future generations will take it for granted and seek to dismantle the technology first in order to use it. *(Interactive Designer 2)*

It is difficult to predict when this digital mode of communication will become 'second nature' to current and future generations. Until it does this focus on, and exploration of, technology will remain an influential factor for designers. When participants were asked what their main concerns were regarding current web-based typography, unsurprisingly most referred to the technical limitations of the screen medium. Issues most frequently discussed were those regarding:

1. Visual quality
2. Typeface control
3. Reading styles

Visual Quality and Typeface Control

Type looses a considerable amount of its subtle visual quality on screen. Recognizing that most existing typefaces have been developed for print, font foundries are increasingly developing new typefaces specifically for screen-usage. Limited sets of typefaces available in different operating systems results in a recurring family of fonts that are used on HTML based websites. This limitation has resulted in many designers opting to use Flash-based technology[3] to deliver web-based content. The Flash file format (developed originally by Macromedia) offers full visual delivery control to the designer, unlike HTML documents whose typographic output is dependent on an individual machine's hardware and software specifications.

Reading Styles

The cognitive process involved in reading a printed document is very different from the process of reading a screen document. Understanding the differences in how we read the two media is often a neglected issue in the application of screen-based typography. Unlike print, users are rarely involved in 'deep' reading. Instead users are mostly scanning and searching for information. This difference in reading styles affects the structure, layout and content of screen-based text.

6.4.2.2 New Media Characteristics

Interactivity

In his book, *The Language of New Media*, Lev Manovich (2001) questions whether new media is truly interactive. He does so by making a distinction between 'closed' and 'open' interactivity. This distinction is important as any cultural object has the possibility of 'interaction'. 'Physical interaction between a user and media object' (2001, p.57) thus cannot be taken as what interactivity means. Defining the different modes of interactivity in media allows the reinstatement of interactivity as a key principle in new media. Unlike Manovich, who sees interactivity as a peripheral characteristic of new media, this study places the characteristic of interactivity as one of the key elements in the development of new media content. This idea is explored in the interviews by asking participants how they define the concept of 'interactivity' in the context of new media. Three types of interactivity based on Szuprowicz's (1995) concept of 'multimedia information flows' were presented to the interviewees. Szuprowicz divides these information flows into three categories:

1. 'User-to-user' interactivity is defined as 'collaborative transactions between two or more users'.

[3] Flash-based websites uses the Flash application to create multimedia and interactive screen-based content. It requires a Flash player application that can be downloaded free from the Adobe website (since Macromedia was acquired by Adobe in 2005) and installed as a plug-in for web browsers.

2. 'User-to-computer' interactivity is defined as 'more exploratory interactions between a user and various delivery platforms' characterized by more advanced forms of interactivity, which give the user a broader range of active choices, including access to tools that can manipulate existing material.
3. 'User-to-documents' interactivity is defined as 'traditional transactions between a user and specific documents' and characterized by being quite restricted since it limits itself to the user's choice of information and selection of the time of access to the information. There is little or no possibility of manipulating or changing existing content (p.14 quoted in Jensen, 1999).

The first two categories perhaps best describe the levels of interactivity found in new media, while the third describes the interaction between the user and older media such as in print, art and film. This third category refers to Iser's idea that 'central to the reading of every...work is the interaction between its structure and its recipient' (1989, p.160), implying that the realization of the work is a result of an interaction between the text and the reader. Participants were split in their opinions regarding the level of 'interactivity' between a reader and a printed text. For those who did acknowledge that print is interactive, they did so by qualifying the level of interaction to the third level. The rest of the participants did not agree with the inclusion of the third level into the definition of interactivity. Games design was singled out by some as an important influence in the development of interactivity in new media. The level of engagement achieved by digital games remains unmatched by other new media content.

Participants were asked to comment on the assumption that 'interactivity' is the key difference between print and screen media. Whilst most of the participants acknowledged it as an important element of new media, they stop short at stating that it is the most distinguishing feature. They list other influential elements such as time-based motion and multi-linking capability that should also be taken into consideration, for instance:

> There are differences in media and these should be addressed. The simplest answer has to do with static versus motion. Type on screen has the potential to morph and this is at best eye-catching, but usually more entertainment that anything else. I think designers should address how moving type differs from static type and what the implications are on the retention of message or idea. *(Design Writer and Educator)*

Multi-Linking Capability

Multi-linking can be described as a series of linked digital media. This feature is employed in two different ways. The first is to create a multi-linear narrative as seen in Hypertext fictions, while the second is to provide contextual links between different sections of content found in manual documentation or reference material, such as the Encarta CD-ROM. As print typography is closely linked and even referred to as text, participants were asked if they envisage an analogous relationship between screen type and Hypertext. Generally, most acknowledged that Hypertext is part of what makes up the elements of screen-based typography. However, they did not agree that Hypertext could be taken as the complete model for all screen-based typography, for example:

> I think Hypertext is one very useful and now prevalent way to combine interactivity with text. But it is just one small example that has caught on with popularity.
> *(Interactive Designer 1)*

6.4.2.3 New Reference Frames

The World Wide Web has been in existence for more than ten years. Its introduction and development has revolutionized the way we communicate and work. Chartier (1995) argues that the current shift from print to electronic technology is an even bigger leap than the one from manuscript to print. Despite this, we have already become more accustomed to reading from the screen than we were five years ago. The (re)learning curve has levelled out somewhat and the level of association between the new and old media has begun to diminish. This level of medium transition is reflected in the ideals and attitudes of newer generations of designers. Designers have become more comfortable (or ignorant, as some would argue) with visually 'imperfect' letterforms and the lack of typographic control. New generations of designers and users will be less hampered by conventions and expectations derived from older media. This study needs to take this evolutionary shift into consideration and perhaps be mindful of how the framework accommodates the next generation of designers and users. This is how one participant described this evolution:

> So, yes we all recycle the past whilst tomorrow's youth will create the future. We can but remind the new ones of critical areas of concern, which they will shun or embrace or edit at their will. Our job is to accept the inevitable and offer encouragement. We can continue to be a sounding board or springboard for 'the revolution'. *(Interactive Designer 2)*

6.4.2.4 Remediation of Old into New Media

In *The Language of New Media*, Lev Manovich (2001) stresses the connection and continuities of the old into new media, and specifically uses the art of the cinema to highlight this point. The term 'remediation' is borrowed from Bolter and Grusin's (1999) description of how new media define themselves by borrowing and refashioning earlier media forms such as print, photography, radio, film and television. They argue that 'visual media achieve their cultural significance precisely by paying homage to, rivalling and refashioning earlier media such as perspective painting, photography, film and television' (1999, p. back cover). Screen-based typography is essentially going through the same process of remediating print-derived knowledge into a usable format for screen. Participants were asked to comment on this cycle of borrowing and refashioning, and how the digital medium has thus affected screen-based typography.

All participants acknowledged that this activity is inevitable as there are few direct precedents to new media. Its development will consist of constant cycles of knowledge remediation from existing media and new knowledge generation influenced by other parallel media, such as Games Design and Interactive Art. Generally, most participants believed that current designers are far too focused on the repurposing of knowledge rather than the generation of new knowledge from external disciplines. One participant went as far as to state that 'truly innovative authorship has yet to happen'. He went on to predict that the future generation would eventually focus more on new knowledge generation:

> It is the 'playstation generation' brought up their entire lives with the knowledge and understanding of true screen-based immersive programmes via 'playstation' et al, and importantly who are not yet of a significant age to contribute in a real sense to the world stage of media and communications. *(Interactive Designer 2)*

6.4.3 Defining the Role of Future Screen-Based Typography

The previous section detailed the factors which have and will continue to affect the understanding and practise of typography in screen-based media. This section describes how participants anticipate the role of typography evolving, in light of the changes brought about by factors discussed previously.

6.4.3.1 'It's about Communication'

Participants were asked if they agreed with the observation derived from the questionnaire findings, that graphic and new media designers predominately consider type as their preferred

tool of communication in screen-based media. There was a general agreement to this statement as demonstrated by the views of these participants:

> The role of typography is to convey messages clearly, efficiently, and with a modicum of visual interest. It will remain that way. Letters will be used in various ways, as message, vessel, art etc. This has been true and will be true. *(Design and Media Theorist 1)*

> The role of type is to be the carrier of ideas/meaning, etc., which I think it will continue to do so. *(Design and Media Theorist 2)*

> I do think the web will continue to be primarily text/typography in the future. It's the most concise and powerful form of communication we have. *(Interactive Designer 1)*

6.4.3.2 Status Sharing

The primary role of typography will remain unchanged from its established function as a denotative communication form. Its principal challenge is integration with other visual and verbal forms of communication available in the digital medium. Although type has been the sole vehicle for transmitting textual information in the print medium, the digital medium has introduced the possibility of sound and animation for a similar purpose. Words can now not only be represented typographically but also aurally through forms of digitized video and audio. Selecting and integrating these various communication forms has become a major consideration for screen-based designers. This is how one participant describes it:

> I can't imagine that language, as a communications medium will diminish. The question is: what will be the balance between oral forms (digitized audio) and verbal forms (typography). *(Hypertext and Communication Media 1)*

The implication of this development is that, whereas type's main role of communication is shared with other forms of communication, the possibility of typography embracing a connotative role has increased. Although the usage of type as an expressive tool is not new, it has certainly been enhanced by time-based and interactive elements of screen-based media. Current technology offers designers a wider choice of how they could represent typographic forms. There are a growing number of designers taking up this opportunity, experimenting and developing alternative paradigms in which to view and apply type. However, it remains unlikely to displace the denotative role of textual communication.

6.4.4 Shaping the Framework

6.4.4.1 Medium Dependency

One of the main findings from the previous questionnaire survey showed that the framework should be independent of medium. Participants were asked to comment on an alternate viewpoint, which places a much higher emphasis on the need to understand and cater for characteristics of screen-based media in the consideration of the framework. All participants agreed that these two viewpoints are not mutually exclusive. Instead, these viewpoints should be taken as two complementary elements of the framework.

Based on participants' feedback, the first element could encompass the basic tenets of typographic principles, while the second element could relate to medium-specific skills. Learning and understanding these skills requires a deeper understanding of the characteristics and limitations of different media. In short, the first element is a global overview of typographic concepts, whereas the second element consists of different sets of knowledge relating specifically to individual media.

6.4.4.2 Cross-Disciplinary Influences

Findings from this study have identified three distinguishing characteristics of new media:

1. Hyper-textuality
2. Interactivity (in the form of user and system engagement)
3. Temporality

Discussions relating to these concepts touched on how some new media characteristics have been in existence in established media, for example the concept of time and motion was first explored in film and television media. As a result, to understand the implications of these new media characteristics, it was suggested that the study begin by reviewing the range of analogue and digital media (and their corresponding disciplines), which have reflected these concepts in some form or another. In general, the types of media that are associated with the three new media characteristics are summarized in Table 6.2.

New Media Characteristic	Media
Hyper-textuality	Hypertext Fiction, Computer Games, Prose fiction, Academic Writing
Interactivity	Computer Games, Virtual Reality, Interactive Art
Temporality	Television, Film, Video Art

Table 6.2. New Media Characteristics and Their Associated Media

All participants acknowledged the influence of these media in the development of current new media content. These influences are not only beneficial to its development but as one participant puts it 'unavoidable'. He goes on to state:

> We haven't got a choice because these other media forms are already current in our culture. We have to take them into account in the design of new media.
> *(Hypertext and Communication Media 1)*

Earlier, in Section 6.4.2.4, the term 'Remediation' (borrowed from Jay David Bolter and Richard Gruisin) was used to describe the way in which the digital medium has borrowed from and been refashioned by the print medium. This term can also be extended to describe the way in which other disciplines are being 'remediated' into the development of digital content. Others (see for example Negroponte quoted by Brand, 1987; Lister et al., 2003; Everett, 2003; Baldwin et al., 1996) have termed this development as 'convergence', the place at which disciplines are coming together to create new forms of communications. Understanding the origin of these characteristics and exploring their values will enable the study to determine the shape and form of specialist skills required in the typographic framework.

6.5 Summary and Conclusions

A model was developed to synthesize findings from the study to date. This model was used to explore the relationships between the key findings, and to conclude an approach, structure and content of the typographic framework. At the centre of this model is the identification of current and future roles for screen-based typography. The role of typography is still very much linked to being a conveyer of meaning. The interview process has shown that the introduction of the digital medium has not lessened the importance of this role and has, in fact, increased reliance on typography to communicate in a clear and direct manner (refer to discussions in Chapter 5: Section 5.5.2.1 and Chapter 6: Section 6.4.3). Identification of other roles have also highlighted the need to define and describe different communication functions and qualities of typography. Focusing on communication rather than the aesthetic qualities of typography enables the discussion of typographic issues to transcend media. Typographic issues and principles can be discussed at a conceptual level, without having to continually reference technical and medium-specific conditions.

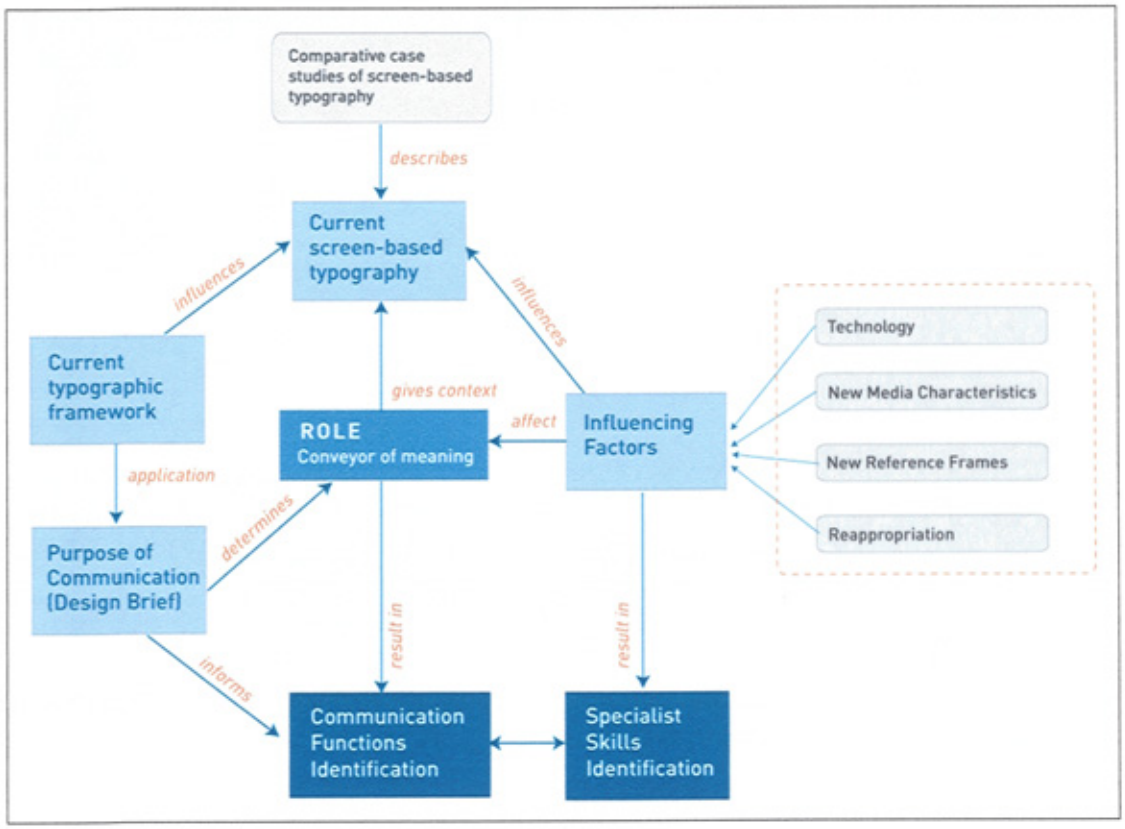

Figure 6.1. Developmental Model of the Typographic Framework

As a young medium, the majority of activity tends to be focused on the exploration of different facets of technology, rather than the exploration and expression of content. It is predicted that as

new media begins to mature, the designer's reliance on typography as his/her main communicative tool will increase as technological improvements relating to visual and typographic control are introduced. This is a viewpoint supported by participants, despite the view that communication will increasingly be through images rather than text (Kress, 2003; Manovich, 2001; Ong, 1982). Additionally, direct knowledge repurposing from print understanding will decrease as newer generations of designers begin to develop new knowledge references from outside the typographic discipline.

The division of typography's communicative role with other new media elements has become more apparent. Just as designers have had to integrate type with image in the print medium, they will now have to learn to integrate video, audio and animation in the screen medium. Additionally, participants were of the opinion that typography needs to be taught and understood in a less insular fashion and should be more open to influences from other disciplines. David Jury insightfully pointed out that 'the study of typography cannot (and more and more *is* not) confined to any one special branch of learning' (Jury, 2002, p.152).

The influence of other disciplines in the development of new media content has been strongly supported. Highlighting and understanding the influences brought about by new media development should be a major consideration in the development of the framework. Findings so far have highlighted three new media attributes that are most likely to have an impact on typography in screen-based media: multilinking, interactivity and time-based motion. The holistic integration of external knowledge, along with the repositioning of typographic principles relevant to the digital media, will form the core approach of the typographic framework.

CHAPTER 7: INTRODUCING A CROSS-MEDIA TYPOGRAPHIC FRAMEWORK

A Framework to Inform and Guide the Understanding and Application of Typography for a Cross-Media Environment

7.1 Introduction

Evidence collected so far suggests that understanding and identifying the future role of typography in screen-based media is key to the development process of this typographic framework. The primary role of typography continues to be as a conveyor of meaning. The influence of other disciplines in the development of new media content has also been strongly supported. Conclusions from this initial research suggest that the development of a framework should consider several key factors. These include the impact of technology on the development and application of typography. There was general acknowledgement and awareness that screen-based media brings with it its own nature, characteristics, constraints and freedom. Consequently, it is crucial for the framework to explore other disciplines for new knowledge. The challenge of this approach is to balance the emphasis between core knowledge and medium specific knowledge.

Using findings from previous stages, a conceptual framework has been developed to aid the understanding, learning and application of typography in a cross-media environment. Figure 7.1 illustrates the stages of development with their corresponding research processes and outcomes which have contributed to the development of the framework. This chapter will introduce the initial framework (developed after Stages One and Two) and detail its development into a comprehensive model that has subsequently been applied in an educational environment. In addition, refinements made to the framework following the action research projects and peer reviews (in Stage Three) are reflected in the final version of the framework. This definitive version is summarised and presented in Chapter 9, Section 9.7.

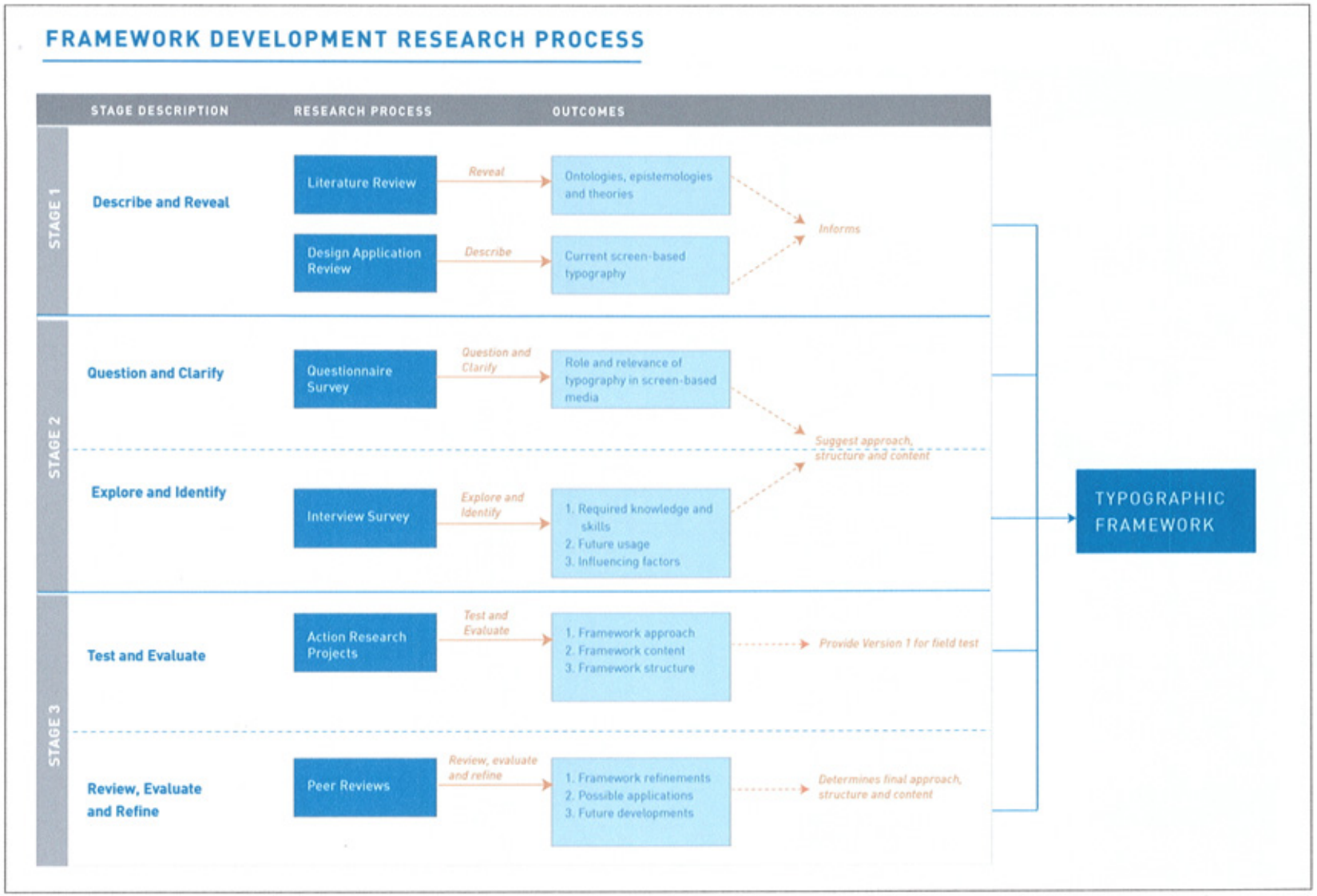

Figure 7.1. Framework Development Research Process

7.2 Aims and Audiences of the Framework

The development of the framework has been directed with these aims in mind:

1. Informing educators on future typographic knowledge requirements in a cross-media environment.
2. Providing a framework for educators to aid the planning, development and delivery of typographic skills required for cross-media communication design.
3. Forming recommendations to guide the future development of a parallel practice-based framework.

This framework does not aim to provide definitive guidelines, nor to prescribe a set method to teach, learn or apply screen-based typography. Rather it aims to provide design educators with an overview of typographic knowledge that is appropriate to the changing profile and skill requirements of students working in a cross-media environment.

The framework has been developed for use within an educational context. Its primary audience is design educators. Subsequent resources and tools derived from the framework may have future applications for design practitioners.

7.3 Comparison between Past and Present Models

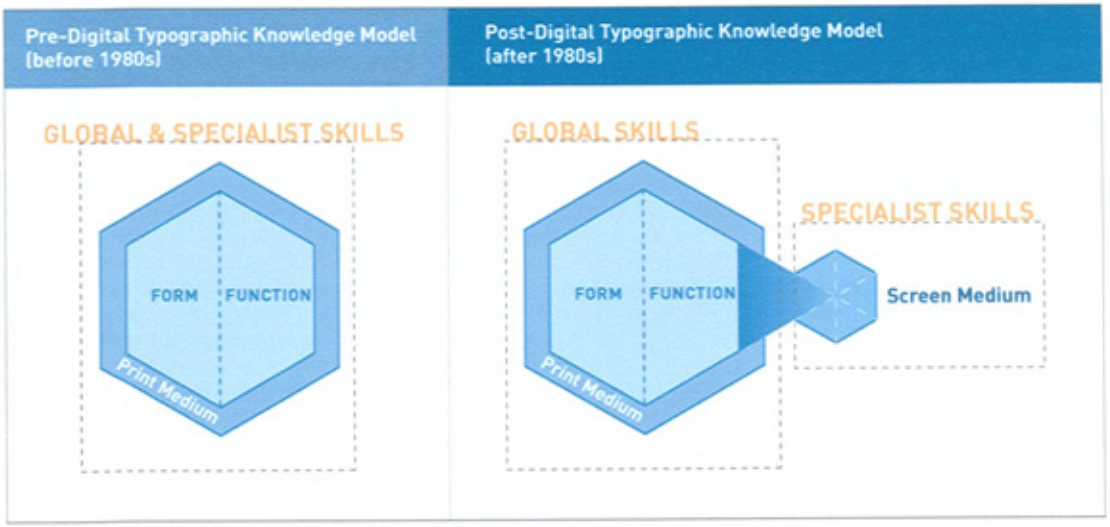

Figure 7.2. Pre and Post-Digital Typographic Knowledge Models

Typographic knowledge in the past was developed and applied for print which, as a delivery medium, has been fairly stable (for example, the form of the book has remained unchanged since the 1600s). Instead, technological developments have generally been related to the manufacturing and designing of typographic materials (such as the introduction of photo mechanical type) rather than in the delivery medium. The growing popularity of screen-based media from the early 1990s onwards has resulted in the adaptation of the print model for this new medium. The result of this adaptation has been the 'attachment' of a new set of skills required for screen-based media. Figure 7.2 illustrates the differences between the pre- and post-digital models.

The introduction of a new communication technology often results in disjointed appropriation of knowledge, leading to uncertainty and doubt (McLuhan and Fiore, 1967). McLuhan feels that this is due to a lack of psychological and sensorial models from which to develop our understanding. As a result, this post-digital model evolved out of necessity rather than from a considered and stable base. Due to the uncertainty and speed at which the screen media has been introduced, it was unsurprising that the current model has continued to be used in the practise and understanding of screen-based typography. However, as the digital environment matures, practitioners are beginning to develop a better understanding of the features, attributes and limitations of the medium.

Typography is a constantly evolving subject, governed by the changing usages of language, medium and technology, making it difficult to formalize its knowledge. As John Kane succinctly puts it, 'the pedagogic difficulty is that type has a system of principles, based on experience, and

those principles keep evolving as language and media evolve' (2002, p.viii). This new framework attempts to provide a more comprehensive source of information that reflects the growing influence of screen-based media and presents typographic concepts within a cross-media context. Its purpose is to aid educators in distinguishing between different communication strategies for typography, and to identify skills required for cross-media applications.

7.4 Key Attributes

Research conducted so far has led the study to identify key attributes of the framework that will enable the development of a meaningful model fit for future cross-media application. These attributes are best described by contrasting them with the current framework in Table 7.1.

Revised Post-Digital Typographic Framework	Current Post-Digital Typographic Framework
Integrated model of knowledge	Separation model of knowledge
Cross-media skills	Print medium skills
Cross-disciplinary knowledge	Subject specific knowledge
Communication focused	Form focused
Principles developed to ensure flexibility and appropriateness	Principles developed to ensure accuracy
Principles developed for a changeable media	Principles developed for a stable medium

Table 7.1. A Comparison Between the New and Current Framework Attributes

7.4.1 Integrated Model of Knowledge

Digital media have enabled the convergence of different technologies and forms of communication. Convergence can occur at both the levels of production and distribution (Lister et al., 2003). In terms of production, newspaper, television and radio may have very different production methods but can now all be created using a networked multimedia computer. Similarly, the distribution of these different content can now be converged into a single stream of delivery through an online network. However, convergence does not result in fewer forms of media; rather the opposite is true, with newer forms diverging and adding to the current forms (Rogers, 1986). As a result, learning and practising design within a single communication medium is no longer feasible. This is the age of multi-modal communication, where messages are being delivered through not one but a multitude of media channels. Therefore, the framework focuses on transferable skills that are applicable across a broad spectrum of delivery channels. The current model of media separation should be integrated to reflect the current convergence of delivery streams, and at the same time address the divergent forms of media by introducing relevant medium-specific content.

7.4.2 Cross-Media Skills

The proliferation of new digital media such as the World Wide Web, interactive television and mobile phones as alternative delivery channels, highlights the importance of transferable cross-media skills. These skills extend to the application of typographic principles across media. An

evaluation of current skills is required to realign existing typographic knowledge with cross-media objectives and values. As a result, identifying transferable cross-media typographic skills became one of the key activities of this study.

7.4.3 Cross-Disciplinary Knowledge

In the past few years, there have been a growing number of designers and typographers advocating a more cross-disciplinary approach towards the subject of typography in light of new educational and technological challenges (see for example Swann, 1997; Swanson, 1998). David Jury insightfully pointed out that 'the study of typography cannot (and more and more *is* not) confined to any one special branch of learning' (Jury, 2002, p.152). The introduction of new media has introduced new concepts such as 'digitality, interactivity, hypertext, dispersal, virtuality and cyberspace' (Lister et al., 2003, p.13). Understanding these concepts and their implications for typography would require a review of its principles and new strategies derived from external disciplines to be embraced. This would result in the development of new knowledge and skills. This study concludes that the new media characteristics particularly relevant to communication design and typography are:

1. Hyper-textuality (multi-linking capability)
2. Interactivity (in the form of user and system engagement)
3. Temporality (time-based motion)

These three characteristics are discussed in more detail in Section 7.5.

7.4.4 Communication Focused

Typography is a complex subject. Understanding typography requires a range of activities such as the development of an aesthetic sense, analytical skills and attention to detail; a focus on historical and technical knowledge and most importantly, an understanding of the way language is used. Typographic education has mainly focused on the aesthetic qualities of typographic forms and the technical proficiency required to achieve it. As Martens (1996, p.129) notes, the function of a typographer is often considered to be a 'form-giver', representing the visual form of language. In comparison, a communication-focused perspective places the understanding of the design objective as a primary concern that will inform the selection of an appropriate typographic strategy. Although these two perspectives (form and communication) have existed side by side, there has always been an emphasis on formal and technical issues rather than communication purposes (probably due to the continued influence of the Modernist and Swiss schools). Focusing on the aesthetic output at the start of a project where design decisions are still being formed often teaches students to apply typographic rules without understanding the communication objectives

that have shaped them. In addition, Jury warns that 'if form loses contact with the message, it will degenerate into novelty' (2004, p.106).

The introduction of cross-media delivery channels have made a form-focused perspective more difficult to adapt. Aesthetic values of different media will always be difficult to reconcile, whereas communication objectives of a particular design are similar across media. Additionally, students will be better informed of their typographic decisions if they begin by understanding possible communication intents of a typographic approach, as one participant from the expert interviews (refer to Chapter 6) observed:

> Designers respond to communication needs and therefore need to have a very broad understanding of all communication components in order to select the right tools for the job. *(Interactive Designer 2)*

7.4.5 Principles Developed to Ensure Flexibility and Appropriateness

Typography has always been considered a 'black art'. Both Kinross (1992) and Jury (2002) have commented on how printers and later typographers practised their 'black art' in secret. It was as Jury describes, 'an activity founded on impiricalism [sic] and, to the outsider, shrouded in secrecy (2002, p.6). The myth of the 'black art' is further perpetuated by 'rules' disguised as styles of typographic practice, as advocated by past typographers such as Stanley Morrison (1951), Eric Gill (1936) and Jan Tschichold (1928). Typographic education has generally been focused on conveying archaic typographic conventions rather than encouraging engagement with the concepts that have led to these conventions. The contextual approach is akin to Erik Spiekerman's (1993) belief that the different features of text typography are all interrelated, and that 'rules' about typography are not immutably fixed, but depend upon the situation (cited by Shaw, 2004).

7.4.6 Principles Developed for a Changeable Media

Principles, often considered as rules, are present to ensure conventionality and predictability (Jury, 2004, p.101). This predictability is crucial in delivering information to readers to ensure the highest possible comprehension. However, most rules were derived with the assumption that the delivery media would be stable and familiar to readers. This is not the case with screen-based media, which is still maturing and has yet to stabilize. Landow (1997) suggests that this transition will take longer than anticipated (hundreds of years rather than decades) and as a result will require an approach that allows for these uncertainties by developing adaptable strategies, capable of evolving in response to the development of the media.

7.5 Global Skills

The attributes discussed in the previous section have given shape to the structure of the framework as well as the strategy for its application. Their relationship can best be illustrated through Figure 7.3.

The framework is composed of two knowledge areas: *Global Skills* and *Specialist Skills*. Generally, the *Global Skills* area is theory and principles derived from historical and practice-based sources. It consists of a set of core concepts and skills (grouped in an historical, technological and application context), which are global in their applicability. The second component, *Specialist Skills* consists of a set of medium-specific skills developed for application in different media.

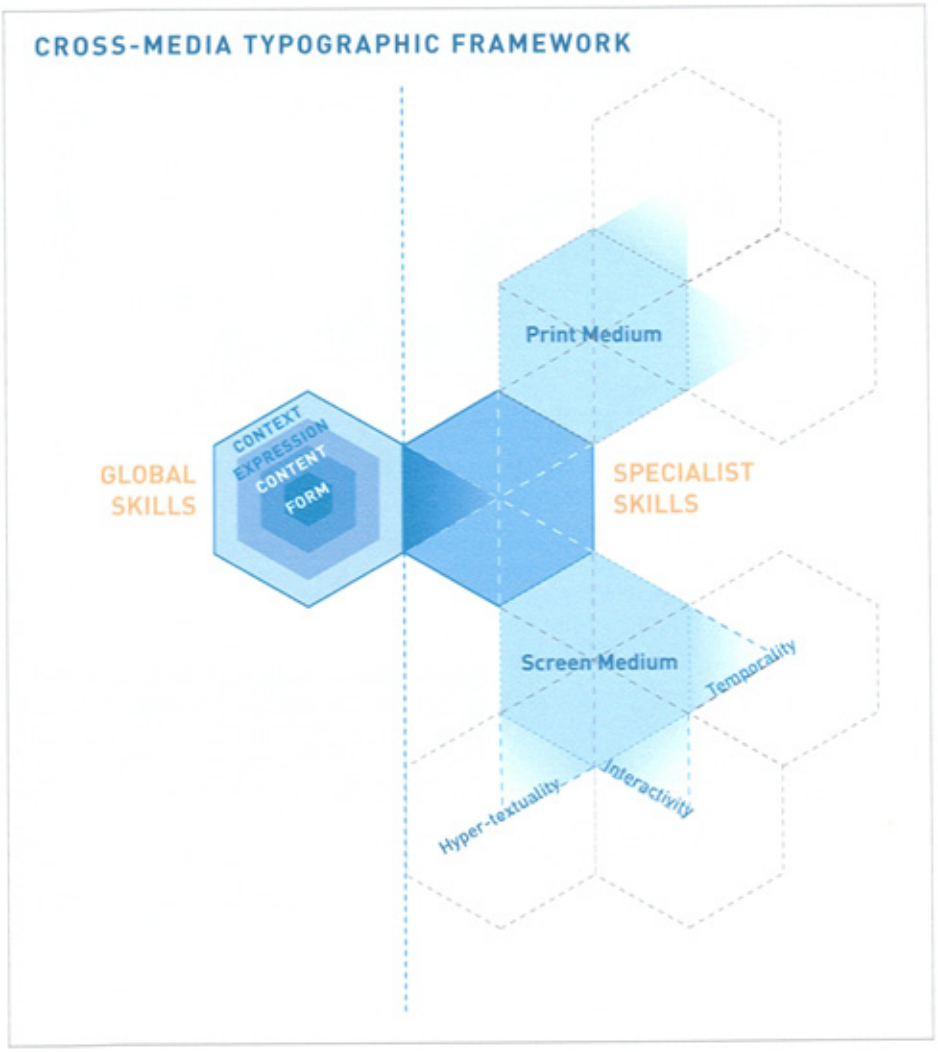

Figure 7.3. Cross-Media Typographic Framework Model

7.5.1 Typographic Aspects

This typographic knowledge model is built around four communication aspects of typography. Each category highlights different sets of skills and knowledge related to each specific communication function. They consist of methods to evaluate, describe and analyse typographic application within the larger context of a designed artefact.

It must be stressed at this point that these aspects are not mutually exclusive to each other, and their subject matters often overlap. However, this study suggests that using a grouping based on typographic communication intent rather than on technology-based typographic principles will provide a more relevant framework for a cross-media environment. According to Oxman (2004), if knowledge is structured and coded in a way that is easily understandable and accessible, it is more likely to be used. Discussing and delivering typographical knowledge using this framework will in theory allow learners to understand typographic principles more effectively, and apply typography confidently across media. These four classifications are defined as:

1. Typographic Form
2. Typographic Content
3. Typographic Expression
4. Typographic Context

7.5.1.1 Typographic Form

This classification refers to the visual appearance and aesthetic quality of letterforms and type. The principles and skills in this category refer to the understanding, description and creation of different visual configurations of letterforms. Discussion in this category would revolve around the:

1. Anatomy of individual letterforms and multiple units of letterforms.
2. Formal attributes of individual letterforms and typeface families (relating to typeface classification).
3. Aesthetic quality of type, ranging from individual letterforms to word, sentence and paragraph units.
4. Terminology used to describe these aspects of typographic form.
5. Principles and strategies used to generate the required form.

7.5.1.2 Typographic Content

This classification refers to the various ways type is used for different delivery media and content genres. The principles and skills in this category refer to the understanding, description and creation of textual content. Discussion in this category would revolve around the:

1. Characteristics, formal attributes and purposes of textual configurations, such as informative, instructive and narrative text.
2. Characteristics, formal attributes and purposes of various analogue and digital media such as the book, newspaper, leaflet, brochure, poster, magazine, web page, signage, interactive TV, film, mobile phones, PDA, teletext, etc.
3. Characteristics, formal attributes and purposes of the ideographic units of typography (such as punctuation, parenthesis, colon, full-stop, brackets, question marks, exclamation mark, indentation etc.).

7.5.1.3 Typographic Expression[1]

This classification refers to how typography is used to generate and communicate phonetic and ideographic meanings. The principles and skills in this category refer to the understanding, description and creation of meaningful forms of typographic content. Discussion in this category would revolve around:

1. The historical, cultural, social and political association of typefaces and typographic styles.
2. The stylistic association of typefaces and typographic style.
3. The visual association of typefaces and typographic style.
4. The usage of phonetic and ideographic symbols to generate meaning (either through the usage of phonetic spellings of spoken accents such as those employed in Irvine Welsh's novel, *Trainspotting* (1993), or the use of punctuation to represent pitch, volume or stress).
5. Understanding the process of interpretation by its audiences.

7.5.1.4 Typographic Context

This classification refers to the internal and external context in which typography functions. The principles and skills in this category refer to the relationship between readers' interpretations of the communication brief, and the design solution. Discussion in this category would revolve around the:

1. Understanding of how audiences are interpreting the message.
2. Understanding and translation of the communication brief into a typographic-led design concept.
3. Selection and manipulation of the appropriate technology to transmit the message.

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[1] The original term used to describe this classification was 'Typographic Meaning'. However, it was changed to 'Typographic Expression' following the peer review sessions (see Chapter 9). It was felt that the term 'Expression' was a less ambiguous word and referred specifically to 'expressive' meanings highlighted by this category of communication intent.

4. Selection and manipulation of the appropriate medium to transmit the message.
5. Usage of typography in relation to other design elements such as images, colours, sound, animation etc.

Each category has its own set of principles, issues, skills, technologies and terminologies grouped into three main areas: (i) historical, social and cultural issues (ii) technology and method and (iii) theory and application. These three groups are termed the Knowledge Categories. Tables 7.2-7.4 provide a detailed (but not exhaustive) list of each groups' contents. Content for each category is not exclusive, and in some instances, does overlap. This detailed list is not only meant to be a useful guide but more importantly, to be used as a manifestation of the framework's concept. As such, the study expects the contents to evolve and change accordingly when the framework is developed further.

7.5.2 Typographic Knowledge Categories

7.5.2.1 Historical, Social and Cultural Issues (refer to Table 7.2)

Knowledge grouped in this category concerns the record of knowledge generated by past events specific to the subject of typography. This includes the development of the letterform, writing systems, communication media, typeface classifications and the social impact of the written word. Historical, social and cultural factors are considered in the development and discussion of typographic practice.

7.5.2.2 Technology and Method (refer to Table 7.3)

This category addresses the processes, skills, techniques and technologies used in the application of typography. This includes principles, theories and best practice methods generated through collective experiences and agreed upon by the typographic community.

7.5.2.3 Analysis and Application (refer to Table 7.4)

This category identifies past and current examples of typographic application and analyses how typography has been applied in relation to the communication purpose. This includes discussions on the mode of use, examples of application and considerations on its appropriateness.

Table 7.2. Historical, Social and Cultural Issues

KNOWLEDGE CATEGORIES	TYPOGRAPHIC ASPECTS			
	FORM	**CONTENT**	**EXPRESSION**	**CONTEXT**

Historical, Social and Cultural Issues	**Phonetic Symbols**
	- Roman alphabet
	  o Rebus system
	  o Phonecian Alphabet
	  o Greek alphabet
	  o Roman alphabet
	  o Upper & lower case
	  ▪ Uncials
	  ▪ Half uncials
	  ▪ Carolingian miniscule
	- Numerals
	  o Roman numerals
	  o Arabic numerals
	- Mathematical symbols
	
	Classification and Description
	- Historical models
	  o VOX
	  o British Standard 2961
	- Descriptive models
		Ideographic Symbols
		- Punctuation
		  o Type
		  ▪ Exclamation mark
		  ▪ Punctuation
		  ▪ Parenthesis
		  ▪ Brackets
		  ▪ Colon
		  ▪ Semi-colon
		  ▪ Period
		  o Function
		  ▪ Diacritics
		  ▪ Expression
		
		Function of Text
		- Instructional
		- Informational
		- Recreational
		- Promotional
		- Experiential
		- Selling
		
		Forms of Text
		- Poetry
		- Drama
		- Essays
		- Prose
		  o Fiction
		  o Factual
		
		Delivery Channels
		- Static 2D
		  o Scroll
		  o Illuminated manuscript
		  o Codex
		  o Poster
		  o Leaflet
		- Static 3D
		  o Signage
		- Moving 4D
		  o WWW
		  o TV
		  o Film
		  o Mobile phone
		  o Product Interface
		  o Kiosk
		  o Signage
			Historical associations
			For example:
			- Blackletter (Nazi/German)
			- Art Nouveau (French)
			- Old English (English)
			
			Stylistic associations
			For example:
			- Script (Elegance)
			- San Serif (Modern)
			- Handwritten (Personal)
			
			Visual associations
			For example:
			- Thin/light (Whisper, soft)
			- Heavy (Shout, important etc)
			- Condensed (Tight)
			- Extended (Large, spacious)
			
			Language
			- Written
			  o Punctuation
			- Spoken
			  o Pitch
			  o Volume
			  o Stress
			  o Pause
			  o Accent
			  o Rhythm
			  o Visual (ideograms)
				Technological Determinism
				- Effect of the printing press
				- Digital media
				
				Interpretation
				- Comprehension
				- Meaning creation
				- Visual literacy
				
				Communication Theories
				- Structuralist theory
				  o Shannon & Weaver (1949)
				  o Ferdinand de Saussure
				- Post-structuralist theory
				  o Roland Barthes
				  o Jacques Derrida
				  o Jean Baudrillard

Table 7.3. Technology and Method

KNOWLEDGE CATEGORIES	TYPOGRAPHIC ASPECTS			
	FORM	**CONTENT**	**EXPRESSION**	**CONTEXT**

Technology and Method	**Proportion (in letterforms)**
	- Measurement units
	- X-height
	- Type sizes
	- Counter
	- Ascender
	- Descender
	- Letter spacing
	- Word spacing
	- Width
	- Cap height
	
	Contrast & Unity (in letterforms)
	- Family
	- Style
	  o Roman
	  o Italic
	- Terminations
	  o Serif
	  o San-serif
	- Weight
	  o Light
	  o Medium
	  o Bold
	  o Black
	- Width
	  o Condensed
	  o Extended
	- Stroke
	- Stress
	- Key characters
	- Decoration
	- Ornaments
	- Ligatures
	- Colour
	- Positive & negative space
	
	Clarity
	- Letter shape
	- Character spacing
	- Contrast
	- Counter space
	- Character recognition
	- Colour
	- Special characteristics
	
	Hierarchy & Emphasis
	- Type size
	- Type style
	- Typeface weight
	- Typeface width
	- Type colour
	- Analphabetic symbols
	- Diacritical marks
		Proportion (in text)
		- Type size
		- Letter spacing
		- Word spacing
		- Line height
		- Line length
		
		Proportion (in delivery medium)
		- Aspect ratio
		  o Square
		  o Rectangular
		- Grid
		- Column
		- Golden section
		
		Orientation & Navigation
		- Content mapping
		- Sequence
		  o Linear
		  o Non-linear
		- Cross-referencing
		  o Annotation
		  o Bibliography
		- Section Indicator
		  o Title
		  o Numbers
		- Placement
		- Index
		- Consistency: location and element
		
		Hierarchy & Emphasis
		- Scale
		- Grouping
		- Placement
		- Colour
		- Headlines
		- Sub-headlines
		- Captions
		- Proximity
		- Analphabetic symbols
		- Diacritical marks
		
		Contrast & Unity (in text)
		- Typeface styling
		  o Family
		  o Style
		  o Weight
		  o Width
		  o Colour
		  o Cases
		- Paragraph styling
		  o Line lengths
		  o Drop caps
		  o Flush left
		  o Flush right
		  o Justified
		  o Centred
		  o Indent
		  o Exdent
		  o Small caps
		- Medium styling
		  o Columns
		  o Grid
		
		Balance
		- Symmetrical
		- Asymmetrical
		
		Clarity
		- Line lengths
		- Kerning
		- Leading
		- Size
		- Choice of typeface
		- Positive & negative space
		- Bouma shapes
		- Colour
		- Contrast
		- Choice of cases
		- Medium of transmission
		  o Print (paper & print quality)
		  o Screen (resolution)
		
		Texture
		- Type family
		  o X-height
		  o Stroke width
		  o Counter space
		- Type size
		- Type style
		- Weight
		- Width
		- Line height
			Methods of Expression
			- Typeface styling
			  o Family
			  o Style
			  o Weight
			  o Width
			- Size
			- Colour
			- Decoration
			- Ornaments
			- Placement
			- Emphasis
			- Word-association
			- Sound
			- Movement
			
			Types of Expression
			- Emotion
			- Concept
			- Object
			- Intent
			- Audio
			
			Association
			- Historical
			- Cultural
			- Personal
			- Stylistic
			- Conceptual
				Content Analysis
				- Type of content
				  o Instructional
				  o Informational
				  o Recreational
				  o Promotional
				  o Experiential
				  o Selling
				- Purpose of content
				  o Instruct and navigate
				  o Inform
				  o Entertain
				  o Promote
				  o Share
				  o Sell
				
				Stakeholder Profile
				- Types of stakeholder
				  o Clients or sponsors
				  o Users or audiences
				  o Shareholders
				  o Testers
				  o Business analysts
				  o Marketing experts
				  o Competitors
				  o Technology experts
				  o System designers
				  o Content providers
				  o Regulatory bodies in the industry
				  o Representative of trade associations
				- Discover motives
				- Prioritize list
				- Devise management strategy
				
				Context of Use
				- User profile / personas
				  o Age
				  o Gender
				  o Style preferences
				  o Domain knowledge
				  o Concerns and wants
				- Purpose of use
				- Environment profile
				  o Physical
				  o Social
				  o Technical
				
				Methods of Delivery
				- Static 2D
				  o Scroll
				  o Illuminated manuscript
				  o Codex
				  o Poster
				  o Leaflet
				- Static 3D
				  o Signage
				- Moving 4D
				  o WWW
				  o TV& Film
				  o Mobile phone
				  o Product Interface
				  o Kiosk
				- Signage
				
				Technology – Origin & Creation
				- Type & Typesetting
				  o Hand punch cutting & composition
				  o Mechanical punch cutting & composition
				  o Phototypesetting
				  o Digital
				- Consider original medium
				
				Technology - Output
				- Physical medium
				  o Print
				  ▪ Format
				  ▪ Size
				  ▪ Paper and Printing Quality
				  o Screen
				  ▪ Resolution
				  ▪ Type
				  ▪ Ratio
				  ▪ Size
				- Soft medium
				  o Operating System
				  o Web browser
				  o Rendering technology

Table 7.4. Analysis and Application

KNOWLEDGE CATEGORIES	TYPOGRAPHIC ASPECTS			
	FORM	CONTENT	EXPRESSION	CONTEXT
Analysis and Application	Modes of use - Non-Representational Form o Shape creation o Pattern creation - Representational Form o Image creation - Iconographic Form o Logotype o Monograms o Illuminated Letters Examples of historical application - Incunabula Period (1500s) o German Illustrated Book o Italian Printing Renaissance o French Printed Books - Classical Period (1700s) - Industrial Revolution (1800s) o Victorian Era o Arts and Craft o Art Nouveau - Modernist Period (1900s) o Futurism o Suprematism o De Stijl o Constructivism o Dadaism o Bauhaus & New Typography o American Modernism - Post-Modern Period (1960s) - Digital Period (1980s) Considerations - Visual role o Pattern creation o Aesthetic value and style o Symbolic representation - Reasons for form emphasis o Abstract shape o Combining symbolic meaning with aesthetic possibilities o Challenging perceptions of word and writing	Modes of use - Textual display o Book o Newspaper o Leaflet o Poster o Magazine o Web page o Teletext - Spatial Information Display o Transport map o Time table o Financial statement o Chart - Signage o Road signage o Interior signage o Exterior signage Examples of historical application - Incunabula Period (1500s) o German Illustrated Book o Italian Printing Renaissance o French Printed Books - Classical Period (1700s) - Industrial Revolution (1800s) o Victorian Era o Arts and Craft o Art Nouveau - Modernist Period (1900s) o Futurism o De Stijl o Constructivism o Dadaism o Bauhaus & New Typography o American Modernism - Post-Modern Period (1960s) - Digital Period (1980s) Considerations - Clarity - Aesthetic value and style - Legibility	Modes of use - Emotional expression o Visual poetry o Word-play o Visualising expressive sound - Conceptual expression o Visual poetry o Word-play o Visualising expressive sound - Analogical expression (enforcing the textual meaning) o Visual poetry o Word-play o Visualising expressive sound Examples of historical application - Art and Design Movements o Futurism o Suprematism o De Stijl o Constructivist o Dadaism o Post-Modernism o Post-Structuralism o Conceptual Art o Digital Art - Literature o Concrete or visual poetry o Deconstruction Considerations - Layered associations - Means of interpretation	Modes of use - Narrative creation o Closed o Open o Sequential o Non-sequential o Single author o Collaborative - Narrative presentation Examples of historical application - Art and Design Movements o Futurism o Suprematism o De Stijl o Constructivist o Dadaism o Post-Modernism o Post-Structuralism o Conceptual Art o Digital Art - Literature o Concrete or visual poetry o Interactive Text ▪ Role playing gamebook ▪ Hypertext fiction ▪ Text adventure game (MUD) - Digital o Internet Art o Database visualization Considerations - Narrative creation - Type's relationship with other design elements - Medium usage - Users and audience - Stakeholders - Design objectives

7.5.3 Global Skills Summary: Knowledge Matrix

The relationship between the Typographic Aspects and the Knowledge Categories is illustrated in Figures 7.4 and 7.5. Figure 7.4 provides a verbal summary, while Figure 7.5 provides visual examples summarising the relationship between the three knowledge categories with the four typographic aspects.

	FORM	CONTENT	EXPRESSION	CONTEXT
Historical, Social & Cultural	Knowledge derived from the historical, social and cultural development of the letterform. It traces factors that have contributed to the development of typographic visual attributes.	Knowledge derived from the historical, social and cultural development of various forms of written and spoken communication and its variety of media outputs.	Knowledge derived from the historical, social and cultural development of meaning creation through typographic methods.	Knowledge derived from the historical, social and cultural development of contextual issues affecting typography.
Technology & Method	Knowledge derived from the practical application of letterform creation.	Knowledge derived from the practical application of text composition and arrangement.	Knowledge derived from the practical application of meaning creation through typographic methods.	Knowledge derived from the practical application of various creation and delivery technologies.
Analysis & Application	Knowledge derived from critical evaluations of typographic form application.	Knowledge derived from critical evaluations of typographic content application.	Knowledge derived from critical evaluations of meaning creation through typographic methods.	Knowledge derived from critical evaluations relating to the external and internal factors affecting typographic practice.

Figure 7.4. Knowledge Matrix Summary

Figure 7.5. Knowledge Matrix Visual Summary

7.6 Specialist Skills

Specialist skills describe medium-specific skills required for cross-media typographic application. These skills are derived from cross-disciplinary influences, and based on research conducted so far; three new media attributes were identified. They are hyper-textuality, interactivity and temporality.

7.6.1 Hyper-textuality

7.6.1.2 A Definition

The vision of associative links was first elaborated by Vannevar Bush (1945) in his article 'As we may think', first published in 1945. He was the Director of the Office of Scientific Research and Development (US) during World War Two. He was motivated by the problem of information overload and its subsequent retrieval. As a result, he envisioned the *Memex*, a machine where data could be stored and retrieved by association rather than by alphabetical or numerical systems of indexes. Bush was first to advocate the idea that associative linkage is a better model of information management than traditional methods such as alphabetical and numerical systems of library indices, as it closely resembles the way our own mind works (Wardrip-Fruin and Montfort, 2003; Lister et al., 2003). This idea of associative links has greatly influenced the development of *hypertext* and *hypermedia* concepts.

The term hypertext was actually coined by computer scientist Theodor Nelson in the 1960s, and he refers to it as, '...non-sequential writing – text that branches and allows choices to the reader, best read at an interactive screen' (quoted in Landow, 1992, p.4). Landow proceeds to explain that the term *hypermedia* extends the notion of links within text to visual information, sound, animation and other media elements. According to Lister et al (2003), the history of hypertext can be traced to two divergent strands of development. The first was based on the history of literary and representational theory, which sought to challenge the linearity of text.
The second and more dominant strand of hyper-textual theories relates to the 'identification and celebration of hypertext as the technological embodiment of a particular moment in literary criticism' (Lister et al., 2003, p.28).

The idea of multiplicity and non-linearity of text has been in existence prior to the invention of the digital media. These 'ergodic' literature as Aarseth (1997) describes them, were often atypical works in the history of literature and often sought to challenge the linearity of text (Lister et al., 2003). They were diverse works ranging from ancient texts such as the *I Ching*, to literature classics by Jorge Louis Borges (1964), Italo Calvino (1981) and George Perec (1987), as well as poems by Guiliamme Appollinaire (1980), William Burroughs (1978), Raymond Queneau (1983)

and even including popular children's fiction such as the *Choose Your Own Adventure*[2] series. Additionally, scholars have been using the method of externally linked text as footnotes to provide a second or a third thread narrative to their arguments.

A second strand of theories and usage of hypertext comes from the theories of text proposed by French literary critics such as Barthes, Foucault and Derrida. Known as 'post-structural' literary theories, they criticise the conventional notion that texts are considered independent entities and instead argue that any text exists in a web of textuality. These theories were used to understand hypertext through the ideas of fragmentation, non-linearity and reader author relationship (Lister et al., 2003). This understanding of hypertext has moved beyond Bush and Nelson's notion of it being merely a tool for information retrieval through associative links. It suggests a relational association between the reader, text and author in textual documents. In print documents, the authorial control lies mainly with the author. However, in hypertext documents, the authorial control becomes a shared system, where the reader has the opportunity to change or challenge the flow of narrative set out by the author.

Recent development in hypertext scholarship seemed to caution against the application of post-structuralist theories to draw conclusions on hypertext, instead calling for the development of methodologies that recognize the differences between a computer system and a book (see for example Aarseth, 1997). According to Lister et al (2003), the existing model to conceptualize the relationship between the reader and text requires the questioning of the system that produces the text, as well as the role of the designer in this process. In comparison, post-structuralist theories tend to ignore the effect that a system has on the production of meaning. For example, the algorithm used to return results from a search engine is beyond the control of the author, the designer or the reader and, as a result, imposes its own rules on the construction of meaning.

7.6.1.2 Hypertext and Typography

Narrative in a printed document is generally thought of as sequential, its physical structure represented by a series of pages and top-to-bottom reading. With hypertext, text is represented by multiple entries and exit points in a virtual space. The designer has to be aware of the possible semantic relationships that exist between different units of text, and understand how to exploit associative linking offered by this medium. The possibilities of narrative creation through associative linking of text units have been explored mostly in the genre of hypertext fiction.

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[2] Choose Your Own Adventure is a series of children's book first published by Bantam Books from 1979 to 1998. The reader assumes the role of the main character and at the end of each chapter, is given a choice on how the story unfolds. Often, each story will have multiple endings, and depending on the choices made, could result in a satisfactory or unsatisfactory outcome for the character.

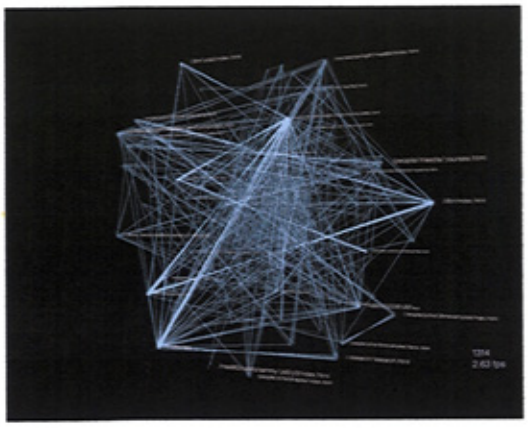
Hypertext fiction such as Michael Joyce's *Afternoon Story* (1987) and Stuart Moultrop's *Victory Garden* (1998) use a series of hyper-textual links to facilitate the creation of a narrative through links and navigation features within the story. A feature of this system is the multidirectional and often labyrinthine linkages readers are invited or obliged to create. As authors themselves have discovered, Coover (1992, p.24) for example commented that 'we are always astonished to discover how much of the reading and writing experience occurs in the interstices and trajectories between text fragments...the text fragments are like stepping stones, there for our safety, but the real current of the narratives runs between them'.

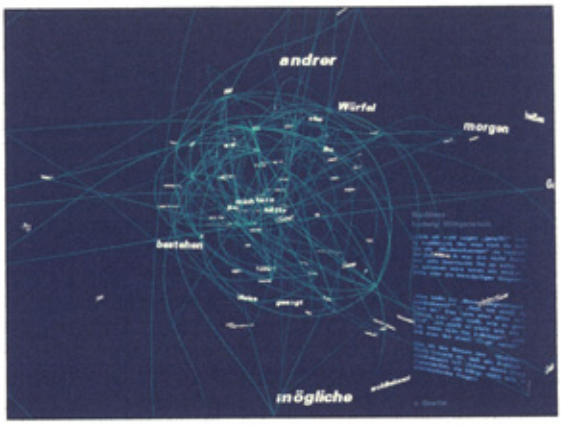
Apart from narrative creation, hypertext is generally used as a navigational device. However, the *Visual Thesaurus* (Thinkmap, 1998) application (see Figures 7.6 and 7.7) manages to merge navigational functions with semantical representation to help users explore and understand language visually. It is a dictionary and thesaurus with an intuitive interface that allows users to display information in different ways, and have the option to view different linguistic relationships (such as synonyms and antonyms) between words.

Figures 7.6. and 7.7. Screen Shots of the Visual Thesaurus Application

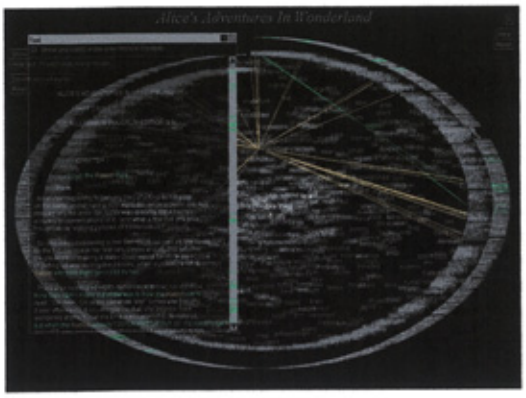
Hypertext can also be used as a powerful annotation device to provide additional contextual information to a piece of content. This can include the usage of bookmarks to provide a one-way link from a reader's desktop to an existing online document. It can be used to provide footnotes or contrasting text to support the main text. Similarly, a hypertext application that generates visual mapping of textual relationship to represent complex information provides alternative ways in which to interpret and understand complex information. Examples of this type of application include Ben Fry's *Valence* (1999) application and W. Bradford Paley's *TextArc* project (2002a). *Valence* (see Figures 7.8 and 7.9) is 'a set of software sketches about building representations that explore the structures and relationships inside very large sets of information' (Aesthetic and Computational Group, 1996). Figure 7.8 illustrates the mapping of traffic to a

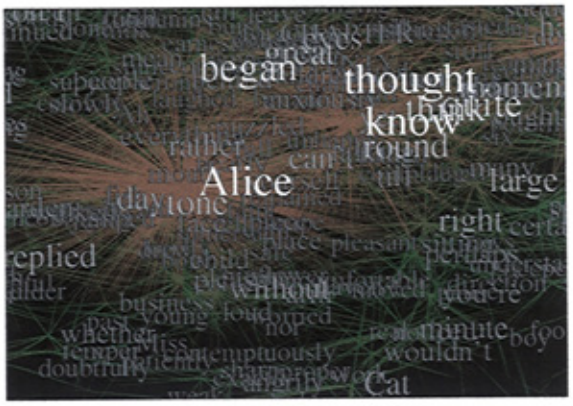
website while Figure 7.9 illustrates the comparison between two German philosophical texts. The *TextArc Project* (see Figures 7.10 and 7.11) is a visual representation of a complete text on a single page or screen, and is 'tailored to expose the frequency and distribution of the words of an entire text' (Paley, 2002b) in order to help readers get a sense of the content.





Figures 7.8. and 7.9. Screen Shots of the Valence Application





Figures 7.10. and 7.11. Screen Shots of the TextArc Application

7.6.2 Interactivity

7.6.2.1 A Definition

Interactivity has become a term that is increasingly used to describe new media and, as such, needs to be defined in clearer terms if it is to be of any use. Lister et al (2003) observes that ideas and definitions of interactivity operate at two levels: one ideological and the other instrumental. At the ideological level, interactivity is one of the main differences in 'old' media, which offers passive consumption. It assumes that users are consumers, and uses this concept as a key selling point of new media, where it is seen to give more personal choices and experiences to consumers.

However, this study is more concerned with the second level, where interactivity is used and considered as a functional element of new media. The definition of interactivity in this context has been based on Lister and his co-authors' definition:

> Being interactive signifies the users' (the individual members of the new media 'audience') ability to directly intervene in and change the images and text that they access. (2003, p.20)

Over the years, there have been a number of attempts to identify different levels of interactivity. For example, Rhodes and Azbell (1985) identified three levels of interactivity ranging from reactive (where there is little user control of content and structure) to coactive (where the user controls sequence, style and pace) and finally proactive (where the user controls both structure and content). These three levels relate to the degree of control that the user has over program content and structure within the capabilities of the technology. Similarly, Steuer (1995) focuses on the level of user control over the environment, and defines different levels of interactivity 'based on the ability of a technology to produce a sensorially rich mediated environment' (p.41). Rafaeli (1988) defines levels of interactivity based on a continuum and, according to Jensen (1999), centres on the concept of responsiveness, a measure of how the system responds to the previous message. Responsiveness requires that the system 'understands' the user, and registers and stores their input.

The concept of user control and responsiveness has provided the study with a useful starting point in understanding interactivity within a design and typography context. As a result, three levels of interactivity were identified and discussed briefly in Chapter 6: Section 6.4.2.2. Following the subject expert interviews, these initial interactivity levels were revised to reflect the stage findings. The 'user-to document'[3] (Szuprowicz, 1995, p.14) level has been discarded (due to its reduced relevance to digital media) in favour of more specific description relating to the range of interactions between the user and system. These revised levels are discussed in the next section.

7.6.2.2 First Level of Interactivity

At this level, the physical structure and hierarchy of the content remains unchanged. However, physical and cognitive interaction occurs during the selection of content. Szuprowicz (1995) describes this type of interactivity as 'user-to-computer', Rhodes and Azbell (1985) term it as 'reactive' while Lev Manovich describes it as 'closed interactivity' (2001, p.53). A common example of this level of interactivity is hyper-textual navigation (Lister et al., 2003), where a user interacts with a fixed collection of information, text, images, and sound to construct an

[3] Szuprowicz (1995) defines interactivity using three types of information flow: 'user to user', 'user to computer' and 'user to document'.

individualized page or sequence of pages through the navigation process. Interactivity of this kind can be found in the WWW, CD-ROM encyclopedias, interactive TV etc.

7.6.2.3 Second Level of Interactivity

At this level, the content hierarchy that is displayed changes and responds to the user's behaviour and selections. Manovich (2001) describes this as 'open interactivity', while Rhodes and Azbell (1985) term it 'coactive'. This type of interaction refers to situations where the user plays an active role in determining the order in which the generated elements are accessed. The system has the capability to modify or generate new objects or responses based on the user's input. This level of interactivity can also be described as an immersive experience when encountered in 3D virtual environments such as the 'Tomb Raider' or 'Doom' computer games. The user and system respond to each other's actions in a continuous feedback loop. In more common hyper-textual environments such as the Amazon website, open interactivity is generated by tracking a user's past purchases and viewings in order to create a more personalized merchandise selection.

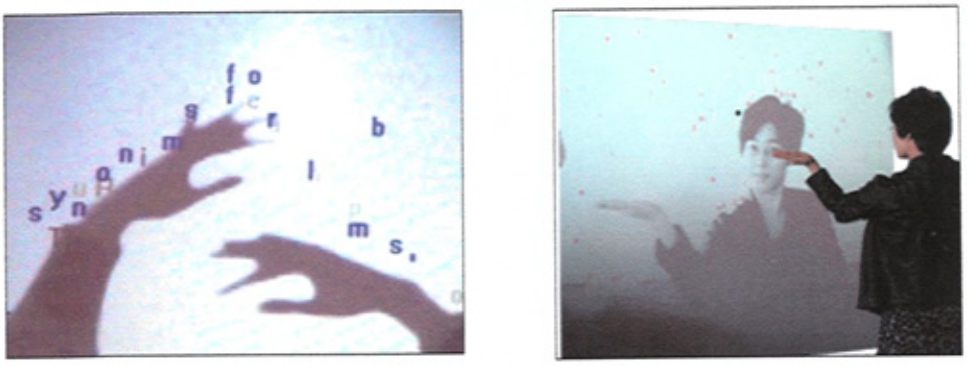
7.6.2.4 Third Level of Interactivity

This third level of interactivity is found in an open and live system where there is continuous engagement between the media, user and content. This system will respond in an understandable manner towards the user by changing the way it operates and executes commands based on a series of previous recorded user actions. This type of interaction would require the highest level of responsiveness from a system, as described by Rafaeli (1988). This level of interactivity is primarily found in the field of artificial intelligence, and would be evident in products such as surveillance systems, intelligent agents, intelligent guides or intelligent interfaces, etc (Jensen, 1999).

7.6.2.5 Interactivity and Typography

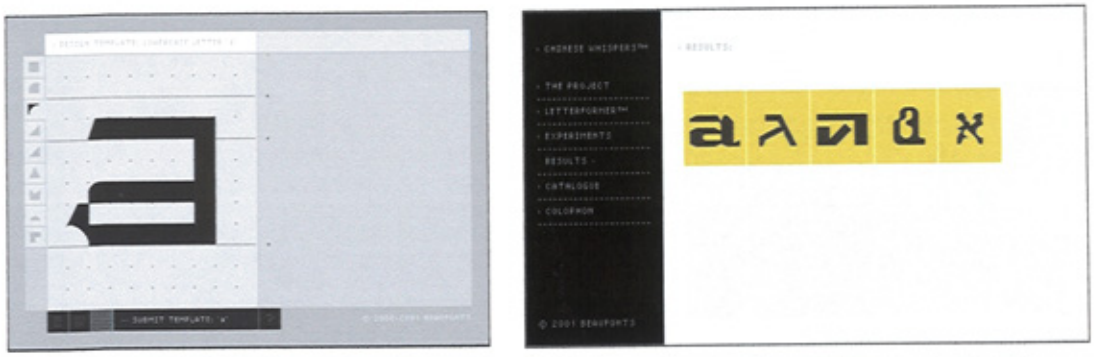
Current examples of work combining different levels of interactivity with typographic elements can be divided into several groups. The first group refers to the type of user control (Steuer, 1995) and the richness of feedback from the system (Shedroff, 1994). For example, in Camille Utterback's interactive installation *Text Rain* (1999), a user interacts with falling virtual letters on a screen (refer to Figures 7.12 and 7.13). Users stand or move in front of a large projection screen, lifting and playing with the virtual letters. The letters are programmed to 'land' on anything darker than a certain tonal threshold. By using their body, users 'catch' words, and in some cases even a phrase. *Text Rain* offers second level interaction due to the system's ability to modify and react to the user's input.

A second common application of interactivity reflects Shedorf's idea of 'productivity and creativity' (2001)[4] which is also commonly found in the second level of interactivity. Projects in this group provide users with opportunities to create, build and alter content in a site. Some typographic examples (illustrated in Figures 7.14 to 7.17) include the *Chinese Whisper* (Beaufonts, 2001) and the *Alphabet Synthesis Machine* (Levin et al., 2002) projects.



Figures 7.12. and 7.13. Screen Shots of Text Rain Interactive Installation

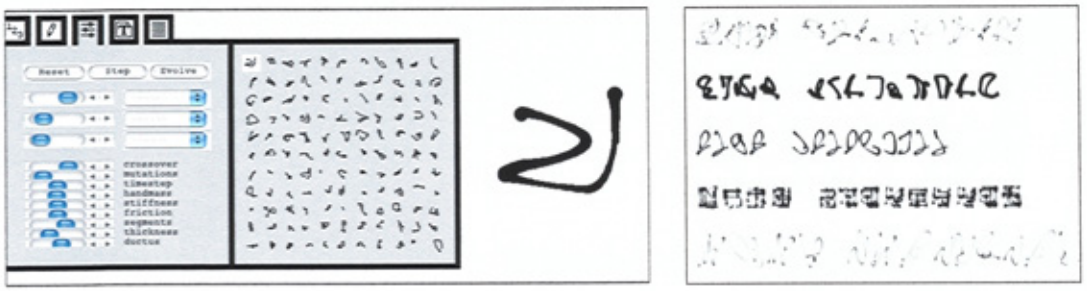
Figure 7.12 shows the close up of the letters during user interaction. Figure 7.13 shows the user in front of the projection screen.



Figures 7.14. and 7.15. Screen Shots of Beaufont's Chinese Whisper Project

Five original lowercase 'a's were created by a set of international designers using the Letterformer™ software. These were then posted on the website where other visitors could use them as a basis to create the other letters in the alphabet.

[4] A fuller description of this concept is located in Chapter 4: Section 4.3.4.1.



Figures 7.16. and 7.17. Screen Shots of the Alphabet Synthesis Machine Application
Figure 7.16 illustrates the various parameters which a user can alter in order to generate a new alphabet. Figure 7.17 shows some of the archived alphabets generated by this machine.

The *Chinese Whisper* (Beaufonts, 2001) and the *Alphabet Synthesis Machine* (Levin et al., 2002) projects mainly illustrate the technical and aesthetic (rather than the communication) possibilities of incorporating interactivity with elements of typography. In comparison, the *Text Rain* (1999) project not only provides rich user feedback, it also exploits the communicative possibilities when users attempt to read and make sense of the words, phrases and sentences falling from the top of the screen. The lack of examples exploring the communicative possibilities of interactive textual environments has reinforced the view that designers should be aware of the theoretical debate surrounding textual interpretations in interactive environments. Authorial power in a hyper-textual environment has become less defined and has altered the relationship between author, designer, reader and text. The traditional (non post-structuralist) reading and creation of meaning from a text makes assumptions about its stability and the fluidity of its interpretation. However, within an interactive environment, the actualization of text has also become fluid. For example, textual content in a community weblog[5] is dependent on the interactions between the users. Designers can only design an empty vessel (in this case a design template) that will be populated with user input. In these environments, designers must consider the level of control and feedback given to users in order to deliver a coherent textual experience. At the same time designers must also accept that absolute control over typographic form is no longer possible, and they should design for multiple rather than single user experiences. Kyffin (2003, p.251) describes this shift from form to experience building by implying that 'we no longer design merely "stuff"; instead we are increasingly proactive builders of our respective cultures.'

[5] Weblogs are websites that contains journal entries, posted on a regular basis and displayed in reverse chronological order. In a community weblog, multiple users can contribute to the discussion threads available on the site.

7.6.3 Temporality

7.6.3.1 A Definition

The term 'temporality' is defined as the passage of time represented in a virtual environment. In relation to new media, it describes the passing of time or a representation of live events viewed from a static screen (Manovich, 2001). Two areas in which temporality has made the most impact will now be discussed.

7.6.3.2 Narrative Delivery

Temporality is used as a technique to deliver a story (or construct one during game-playing) through different narrative structures to an audience or player. It is most commonly found in television, film, animation and computer games. In non-interactive media such as television and film, the delivery of a narrative is the ultimate objective of the producer. However, in role-playing computer games the delivery of a narrative is used as a strategy to facilitate what Murray (1997, p.110-112) calls the 'active creation of belief'. In this system, the player continuously contributes to the narrative as the game is being played.

7.6.3.3 Communication Facilitator

Temporality also facilitates the communication of one to one, or one to many users. It can be found in online instant messaging engines, MUDs (Multi-User Domains) environments, online chat engines and SMS (Short Messaging System). These exchanges are synchronous, ephemeral and interactive. This kind of communication is more akin to face-to-face conversation than analogue written communication.

7.6.3.4 Temporality and Typography

The act of writing reflects our society's attempts to capture time and to preserve our stories in a permanent state (see for example Chartier, 1994; Ong, 1982). Prior to writing, attempts to deliver stories and record information have been orally based. Poets and writers narrated their stories from memory and passed them on from generation to generation using oral means. The inevitable decline of these stories meant that other forms of communication were required for the preservation of prior knowledge. The transition from oral to the written has resulted in an inevitable change relating to how textual information is delivered and processed. The digital media have introduced new ways in which textual information is presented and expressed though the usage of motion. Text can now move or change over time.

The delivery of text in a purely time-based environment was first used by pioneers of motion filmmaking such as George Melies and D.W Griffith in the early 1900s. It consisted of two-

dimensional cards handwritten with dialogues, announcements, news and credits (Bellantoni and Woolman, 1999). By the 1950s and 60s, animated letterforms in title credits were used extensively by pioneering designers such as Saul Bass and Pablo Ferro. In fact, the first known use of motion typography according to Lee et al (2002) was Saul Bass's opening credit sequence for Hitchcock's *North by Northwest* (1959) and later *Psycho* (1960). The difference between these opening credits and earlier film titles were their desire to establish a mood relating to the film, rather than simply conveying credit information. The ability to convey expressive content has made motion typography a popular technique in film and television title sequences, as well as in advertising. In the past decade or so, interest in film title design has been fuelled by the innovative work of Kyle Cooper and his company *Imaginary Forces.* His design work for the film, *Seven* (Fincher, 1995), *The Island of Dr. Moreau* (Frankenheimer, 1996) and *Gattaca* (Niccol, 1997) has demonstrated his ability to use analog and digital techniques to apply innovative visual effects to typography.

The experience of a time-based environment is ephemeral, kinetic, four-dimensional and transient. In this environment it is crucial for designers to create a strong visual impression, and to transmit emotional attachment to the message. Letterforms are now expected to perform both verbal and visual functions, employing techniques normally found in film and animation media. Lee et al (2002) highlights several areas where motion typography has been effective by reviewing previous work by Ford et al (1997) and Ishizaki (1998). They are:

1. Expression of affective (emotional) content
2. Creation of characters
3. Capture or direction of attention

Emotion can be expressed through a number of techniques. For example, tone of voice features such as pitch, loudness and tempo can be expressed through typeface, size, weight or contrast selection. Additionally, temporal effects like timing, speed, duration and pacing can also be employed. Characters in a story can also be portrayed using typography. For example, each character can be assigned specific typographic visual, spatial and kinetic properties. Motion is a very powerful technique to capture or focus the attention of the viewer. Here, Lee et al (2002) draws from perceptive and cognitive psychology to understand the timing and pace required for the comprehension of meaning. Although textual objects may have the perceived disadvantage of requiring more time for viewer comprehension than image-based objects, studies by Mills and Weldon (1987) have shown that where words are displayed one at a time (known as the Rapid Serial Visual Presentation method), reading time is shortened considerably.

Improvements in computing processing power have led to innovative exploration in interactive time-based environments. Projects utilizing temporality as their main feature include works such as *Temporal Typography* (refer to Figure 7.18), investigating the 'expressive power of time varying typographic form to convey emotion and tones of voice' (Wong, 1995); the *Kinetic Typography Engine*, a software engine to facilitate time-based expressive content in typographic manipulation (Lee et al., 2002) and *Expressive Typography*, a 'high quality dynamic and responsive typography in the electronic environment' (Small, 1987). These examples reflect what Drucker (1994) describes as using the 'materiality' of text, where the morphology and choreography of the animated text is used to express or enhance the meaning of the text. Additionally, the work of Wong and Small also explored the concept of three-dimensional typography applied in a four-dimensional space. Small's *Talmud Project* (2000) attempts to combine passages from the Torah, Talmud and in English by exploring 'the simultaneous display of multiple related text' in a three-dimensional virtual space (refer to Figure 7.19). Many of these experimentations on temporal typography originated from the MIT Media Laboratory's Visible Language Workshop (1974-1994), led by Muriel Cooper. This group pioneered the 'information landscape' by using the four-dimensional space as a platform for delivering functional and expressive texts.

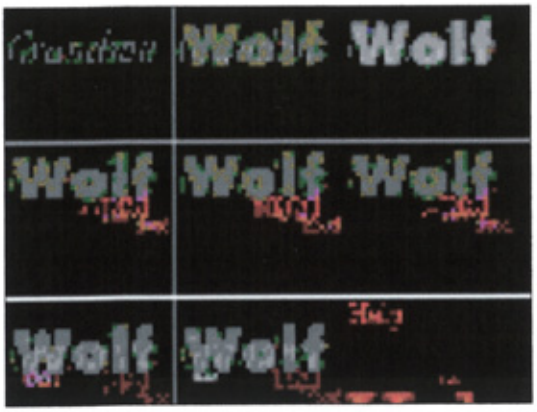
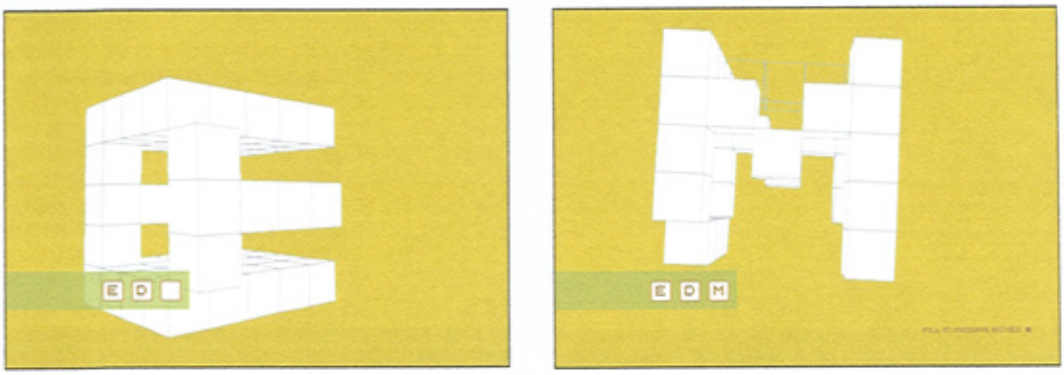


Figure 7.18. Screen Shot of the Temporal Typography Project

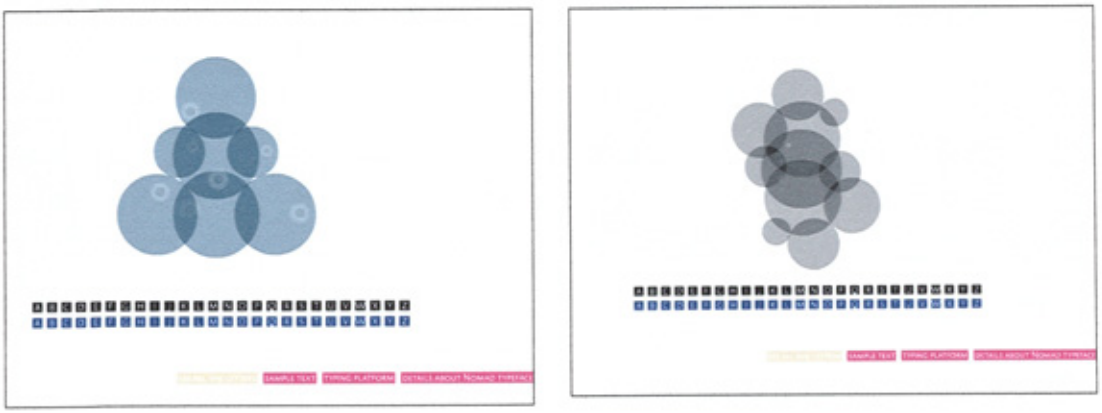
Figure 7.19. Screen Shot of the Talmud Project

In general, attempts to combine time-based characteristics with interactive attributes of user input have been limited. *Intersection* (Lieberman, 2001) is an exploration of how letterforms intersect when projected along the x, y and z-axis of a three-dimensional space (refer to Figures 7.20 and 7.21). The user has the option to select which letterforms appear on the three axes. If the user chooses not to intervene, the object will continue to animate in a random manner, whereas the *Nomad Typeface* (Choi, 2001) is an interactive moving typeface derived from overlapping circular forms (refer to Figures 7.22 and 7.23). Users select letters by typing on their keyboards. Each letterform is animated and has its own individual movements.



Figures 7.20. and 7.21. Screen Shots of the Intersection Application

In Figure 7.20, the letters 'E' and 'D' are projected along the x and y-axis, while in Figure 7.21, the letter 'M' has been added to 3-D form on the z-axis.



Figures 7.22. and 7.23. Screen Shots of the Nomad Typeface (showing the letters 'A' and 'S')

7.7 Summary

An aspiration of the framework was to make explicit the tacit knowledge residing in the practise of teaching and designing with type, as well as to incorporate current thinking of media theory in its content. As discussed earlier in Chapter 2 (see Section 2.4.1) practical disciplines such as typography are rarely presented or discussed as an integrated body of knowledge. As a result, designers and educators are presented with different practice-based models to base their knowledge and practice upon, derived mainly from the major design movements of the 20th century, for example the Modernist, Swiss and Post-Modernist traditions. This framework aimed to provide an integrated, subject-specific and theory-based model for design educators and practitioners in the subject of typography.

This chapter has described the development and content of the cross-media typographic framework. This framework was developed based on conclusions drawn from research conducted so far. It has been developed for an educational audience, and is aimed at providing educators with an updated and predictive model of typographic knowledge suitable for cross-media application. The framework is driven by six core strategic attributes, which have determined the approach, structure and content of the framework. These attributes have created a framework that focuses on communication objectives, rather than the formal aspects of typography. The framework presents an integrated model of typographic knowledge by identifying possible global principles and abstracting them across all types of communication media, taking into account relevant knowledge from cross-disciplinary fields.

The framework is grouped into two skill sets: global and specialist. It assumes that there are certain skills that are transferable across different design domains and media. At the same time, there are certain skills considered to be specialist knowledge which can only be relevant to a subject area. A set of global and specialist skills has been compiled by referring to formal typographic knowledge (through published literature) and cross-referencing with results from the last two research stages. Additionally, the framework content has also been refined through consultation with subject experts. The global skill-set is organized through four main communication aspects of typography which are described as *typographic form, typographic content, typographic expression* and *typographic context.* This conceptual grouping aims to introduce a more relevant approach to understand, learn, describe and analyse typographic usage in a cross-media environment. In comparison, the specialist skill-set for screen-based media (hyper-textuality, interactivity and temporality) can be employed as guidance for educators towards the specific requirements of digital media.

The framework can be applied in many different ways. Its approach can be used to generate discussions regarding the future of typographic education, while its structure and content can be adapted for practical pedagogical use. Educators can use the framework to improve their typographic teaching practice, to understand the relationship between typography and contemporary media or to aid them in assessing the development of their students. In a similar way, designers can use the framework to improve the effectiveness of their typographic design, to understand the relevance of historical and contemporary context of use, or as a mechanism for increasing their confidence in relation to the intellectual source of their knowledge.

The framework has been presented to fellow designers, researchers and typographers in the 2nd International Conference of Typography and Visual Communication held in Thessaloniki, 2004[6]. Additionally, the research methodologies used to develop the framework were the focus of a paper presented in the 2004 Design Research Society's biannual conference *Futureground*[7], held in Melbourne, Australia. These peer review opportunities have subjected the framework to inspection in terms of its relevancy, objective and approach. The following chapter describes how the framework has been put into practice through a series of action research projects, designed to test the value of the framework's approach, structure and content within an educational environment.

[6] A copy of this paper can be found in Appendix 6.1
[7] A copy of this paper can be found in Appendix 7.1

CHAPTER 8: FRAMEWORK APPLICATION

Action Research Projects Aimed at Applying and Evaluating the Cross-Media Typographic Framework

8.1 Introduction

Conclusions drawn from this study so far have enabled the development of a new conceptual framework aimed at improving the practise and understanding of typography in a cross-media environment. Subsequently, action research projects have been devised to evaluate the applicability of this new framework within a higher education context. This will provide the framework with an element of 'field testing' through a variety of educational settings and learning requirements.

8.2 Aims of the Action Research Projects

The broader aim of these action research projects was to evaluate the application of the framework within an educational environment. A more specific aim was concentrated on the key question of 'how to introduce and encourage a broader understanding of typographic knowledge relevant to the screen-based medium?' These projects were not only used to increase the students' knowledge, as one could argue that the inclusion of any additional material relating to typography would result in a similar increase. Instead, these projects were specifically aimed at bridging print-derived typographic principles with current development in multimedia technologies. These projects were supported by materials drawn from the framework, such as the global typographic skills (see Chapter 7: Section 7.5) and the three new media attributes highlighted in the specialist skills (see Chapter 7: Section 7.6). Specifically, the intention of this stage was to assess the approach of the framework that posits:

1. The typographic knowledge matrix, based on communication aspects, is a more effective pedagogical framework to aid the learning and application of typography within a screen-based environment.
2. The introduction of theories, concepts and examples from across disciplines allows strong analogy creation[1], in order to improve learning and application of typographic concepts.

These projects were aimed at second year multimedia (MM) and graphic design (GD) students. These students had basic knowledge and understanding of typography but were lacking in any holistic understanding of typographic usage across print and screen media. The decision to include the graphic design students was based on the discipline's increasing interest in and exploration of screen-based media. As a result, three action research projects were conducted with students from Northumbria University. The first and second projects were conducted with

[1] As cited by Casakin and Godschmidt (1999), Vosniadou and Ortony (1989) describe the use of analogy which entails the transfer of relational information from a known situation to a situation that needs explanation, where at least one of the related elements is not known.

second year multimedia students (where the first project was employed as a pilot study) while the third project was conducted with second year graphic design students.

8.3 Subjects of Study, Setting and Background

8.3.1 Selection of Students and Programmes

The action research projects were conducted with Northumbria University's design students. The selection of students from this particular university was based on two factors: opportunism and practicality. As a known member of staff in the School of Design, it was easier for me to gain access to the multimedia and graphic design students than it would be for an outsider. Additionally, my personal contact with tutors from both programmes meant that they were more accommodating to the needs of the study. Being based in the same campus as the students saved me travelling time and meant that I was available to see students outside of class time if needed. This study acknowledges that conducting the action research project in only one British University is a limitation to the research, and has addressed this limitation with a contextual review of other UK-based design programmes. This review is located in Chapter 1: Section 1.6.

Second year students were chosen as the subject because they were considered novice designers with limited expertise in design skills. Expertise in design is 'understood as a possession of a body of knowledge and the creative and analytical ability to extract, analyse and apply that knowledge' (Popovic, 2004, p.528). Typography is considered to be a domain-specific knowledge that is generally introduced and emphasized at the intermediate stage of a design programme. Unlike general design knowledge models, typography is mainly relevant to visual communication design programmes such as graphic and multimedia design.

8.3.2 Multimedia Design Programme

The multimedia design programme's leader considered the students' levels of typographic knowledge to be poor and problematic. She realised that the programme lacked specialized typographic modules in the first year, and believed that the students were missing fundamental grounding in basic typographic principles. Typography was not a priority of the programme due to the nature of its historical development. Up until a few years ago the programme was only staffed by part-time tutors, resulting in a lack of direction and stability which is required for long-term planning. Additionally, the lack of type expertise from past staff members has meant that typography became an under-developed subject within the multimedia programme. In its recent restructuring, the multimedia programme has introduced new modules based on design sectors, such as Information, Entertainment, Promotion and Publishing Design. By focusing on design sectors rather than design outputs (such as interactive games, websites or DVDs), students are

now expected to develop cross-media design skills. This brings into focus the importance of developing cross-media typographic skills.

8.3.3 Graphic Design Programme

In contrast to their multimedia counterparts, graphic design students are provided with a better grounding in typographic principles. They have two modules devoted to the subject of typography during their first year: 'Typography: Aesthetics, Hot Metal and Digital' and 'Typography: Design and Application'. These modules provided students with a fundamental grounding in the principles of typography. Despite the availability of these classes, the graphic design tutors still rated the second year students' level of knowledge to be fairly limited and lacking any holistic understanding. The tutors acknowledged that typography is a difficult subject to master and it will generally take a full three years before students are able to confidently apply typographic principles.

Both programmes recognize the importance of formal training in typographic principles and are trying to improve this aspect of teaching within their first year programmes. Although the design philosophies and objectives of both programmes are different, the differences between graphic and multimedia design are not so easily distinguishable. Like multimedia students, graphic design students are increasingly required to work across media. Therefore, it is just as important for graphic design students to apply their typographic knowledge with an informed viewpoint of screen-based technologies and concepts, as it is for multimedia students to understand the print origin of typographic principles.

8.4.Methodology

8.4.1 Tutor as Researcher and Professional

Action research is defined by Greenwood and Levin (1998, p.7) as a balance of three elements: research, participation and action. It is normally used in cases where practitioners want to study their (or their groups') own practice to understand it better, to improve it and to collectively promote change. This project uses Greenwood and Levin's (1998) model of *co-generative research* via *co-generative learning* in which the action researcher as the 'friendly outsider' tries to bridge the 'world of scientifically constructed knowledge' of the outsider with the 'world of practical reasoning' vis-à-vis the 'local knowledge' of the insider (1998, p.113). In their model, Greenwood and Levin identified 'two main groups of actors', the insiders and outsiders (1998, p.115). The insiders are the focal point of every action research project, while the task of the outsider is to facilitate a co-learning process aimed at solving local problems experienced by the insiders. This method was chosen because it closely resembled the project environment. As the researcher, I was considered an outsider due to the fact that I was not part of the academic staff of either programme.

McKernan (1996) presents a detailed case on the suitability of using action research methods in curriculum development. His description of curriculum development draws up a model of a teacher acting as a critical reflective practitioner. He states that:

> A curriculum is at base an educational proposal, or hypothesis, which invites a critical response from those who implement it. A curriculum then invites teachers and others to adopt a research stance towards their work, suggesting rigorous reflection on practice as the basis of further professional development...The key idea is that each classroom or work space becomes a laboratory for testing, empirically, hypotheses and proposals that are the planned and implemented curriculum. Each practitioner is thus a member of a critical community of educational scientists. (1996, p.4)

8.4.2 Role of the Researcher

My task in the action research projects was to deliver lectures, as well as to provide support to the students as a secondary tutor during the duration of the module. My role during these tutorials was as a combination of participant and observer. My main objective was to support the primary tutor, specifically, but not exclusively, on typographic matters. At the same time, I observed and made field notes on students' interaction and development during the module. So, although there was a mix of data collection methods from both observational and non-observational techniques, the dominant style of observation was participant observation. Participant observation may be

defined 'as the practice of doing research by joining in the life of the social group or institution that is being researched...thus the researcher has a twofold goal: to take on the role of a participant in a setting and to inquire into the ethnographic character of the setting' (McKernan, 1996, p.63). Spradley defines ethnography as 'learning from people' rather than the act of studying people (1980, p.3). Gold (1958) as cited by McKernan (1996, p.62) describes four kinds of observational role:

1. Complete participant
2. Participant as observer
3. Observer as participant
4. Complete observer

I took up the role of participant as observer and observed the group from within the study group. The students and primary tutor were made aware that my presence was a 'field relationship' and that I was only present for as long as the study continued. However, it was important to maintain a balance between the observation and the participation element. Too much observation without participation might alienate the participants, whereas too much participation may result in the loss of objectivity. Robson (2002) also acknowledges the difficulty in maintaining the dual role of observer and participant, pointing out that variable factors such as age, class, gender and ethnic background can be important in certain circumstances. However, these factors were not significant to the outcomes of this study.

McKernan (1996) discusses the advantages and disadvantages of the use of observational techniques. The advantages include having a naturalistic setting for the enquiry, allowing as much time as possible to gain a representative sample of behaviour, and the opportunity to observe non-verbal behaviour. The disadvantages to observational studies are the difficulty in quantifying data, the small size of population observed, the problem of generalizability and the possible behaviour distortion caused by the presence of the observer. In order to counter the first problem, the study collected non-observational data to supplement and support the observational data. Comparing similarities and differences between the three different sets of students across projects countered the possibility of over-generalising issues, and enabled a clearer identification of generic themes. Any student behaviour inconsistencies, such as being unusually withdrawn or disengaged, were monitored closely with the primary tutors and discussed during the pre and post-project interviews with them.

8.4.3 Data Collection

According to McKernan, 'action research permits a wide variety of reactive and non-reactive research methods and techniques' (1996, p.57), which are ideal for complex situations like a classroom. Methods used are often 'eclectic-innovative' (McKernan, 1996, p.32) with no preferred method, though the use of triangulation of methods, perspectives and theories often occurred. McKernan (citing Elliott and Adelman, 1976; Elliott, 1978) defines triangulation in the context of action research as 'a procedure for organizing different types of evidence into a more coherent frame of reference or relationship so that they can be compared and contrasted' (McKernan 1996, p.184). Mixed methods can be used in combination as long as the selection of methods is suited to the purpose of the study, agreed by the research collaborators and does not oppress the participants (Melrose, 2001). McKernan goes on to provide an extensive list of possible methods and techniques for use in an action research project. Generally, these fall into four categories:

1. Observational and narrative research methods
2. Non-observational, survey and self-report techniques
3. Critical reflective and evaluative research methods
4. Discourse analysis and problem-solving methods

An evaluation of action research methods was conducted prior to the project in order to identify suitable methods relating to the aims of this study (this is located in Appendix 8.1). Additionally, the review was used to evaluate the advantages and disadvantages of each method in order to identify potential problems that might compromise the quality of the data collected.

8.4.3.1 Review of the Data Collection Methods and Tools

As a result of the action research methods review, seven types of data collection methods were selected. They were a combination of methods taken from three of the four categories identified by McKernan (1996). The final list of selected methods and techniques used in this study is listed in Table 8.1. Additionally, samples of the different types of data collected are located in Appendix 8.5.

CATEGORIES	METHODS	AIMS
Observational and narrative research methods	**1. Diaries / journals:** 4 categories: - Day account - Reflection on events - Student's voice - Tutor's voice	1. To reflect on events outside of the classroom event. 2. To provide a running commentary on the feelings, insight and interpretive ideas throughout the project.
	2. Video Recording	1. To provide an accurate description of the event and to help in reflective diary entries. 2. To function as an aide-memoire.
	3. Observational Field Notes	1. To provide a descriptive record of the interaction between students and tutors. 2. To provide a descriptive record of the students' behaviours and actions.
	4. Photographic Log	1. To record the artefacts produced by the students.
Non-observational, survey and self-report techniques	**5. Semi-structured Interview (Pre and post-project)**	**Pre-Project Interview** 1. To provide background information relating to the programme and its students. 2. To establish aims and objectives for the project. 3. To discover specific learning needs of the students regarding the subject of typography. **Post-Project Interview** 4. To discover the opinion of the primary tutor about the delivery and outcomes of the project. 5. To identify any student behaviour anomalies due to the presence of the researcher. 6. To judge the effectiveness of the type project based on its original aims. 7. To identify value (if any) brought by the type project to the programme, students and tutor.

Table 8.1. Summary of Data Collection Methods Selected

CATEGORIES	METHODS	AIMS
Critical reflective and evaluative research methods.	6. Module Evaluation (Questionnaire format)	1. To assess overall module a. Content b. Structure and organization c. Relative to other programme 2. To assess the type project within the module a. Content b. Structure and organization c. Lectures d. Programme materials e. Integration within module 3. To assess student learning a. Type knowledge b. Type interest and awareness
	7. Artefact Analysis	1. To assess the quality of work produced by the students. 2. To assess their understanding and application of the concepts introduced through the cross-media framework. 3. To analyse the different forms of type application based on the four typographic aspects.

Table 8.1. Summary of Data Collection Methods Selected (continued)

8.4.3.2 Observational and Narrative Research Methods

The data collected through this method consist primarily of descriptive observations, which are generally used to describe the setting, participants and events that take place (Robson, 2002). Spradley distinguishes nine dimensions of descriptive observation (1980, p.78):

1. *Space*: the physical place of places
2. *Actors*: the people involved
3. *Activities*: a set of related acts people do
4. *Objects*: the physical things that are present
5. *Acts*: single actions that people do
6. *Events*: a set of related activities that people carry out
7. *Time*: the sequencing that takes place over time
8. *Goals*: the things that people are trying to accomplish
9. *Feelings*: the emotions felt and expressed

These dimensions were used as a guide to identify and code the observations made during the event.

8.4.4 Data Analysis

A flexible approach to data analysis was required due to the varied forms of collected data. These forms included narrative field notes, a personal reflective diary, interviews, quantitative questionnaire data and, design artefacts submitted for the final project. An ethnographic method was considered to be the most suitable technique for this project, due to its exploratory approach and suitability to the study of the unfamiliar, new and different (Robson, 2002). This project is essentially trying to evaluate the effectiveness of the typographic framework (*new* and *different*) introduced to students (*unfamiliar* to the framework) who have limited knowledge of typography. Wolcott (1994), as cited by Robson, suggests three steps in the analysis of data in an ethnographic study: description of the culture-sharing group, analysis of themes of the culture, and interpretation. In order to achieve this, the researcher needed to perform the following tasks:

1. Thinking
2. Category development
3. Progressive focusing

Constantly thinking and reviewing data as it is collected is a practical and effective way to make sense of the vast amounts of data collected in these kinds of studies. The researcher will become much more familiar with the data and be able to draw connections across themes. As the familiarity of the data grows, recurring themes will emerge and the development of categories will occur. As analysis and data collection continues the original research question should be developed and clarified. The analysis should be progressively more focused and eventually, as Wolcott (1994) suggests, there will be a shift from description to interpretation. Robson (2002) recommends different ways to accomplish these three tasks, such as looking for patterns, triangulating different sets of data to test reliability and using matrices to compare and contrast data.

Whilst Wolcott's (1994) three steps relate specifically to the analysis of ethnographic data, Spradley's (1980) 'Developmental Research Sequence Method' (DRS) is an attempt at developing 'a more systematic approach to anthropological fieldwork' (1980, p.175). It follows a simple observation made by Spradley that 'some tasks are best accomplished before other tasks when undertaking ethnographic fieldwork' (1980, p.175). According to the DRS method, there are twelve steps in collecting, analysing and reporting an ethnographic study. They are:

1. Locating a social situation
2. Doing participant observation
3. Making an ethnographic record
4. Making descriptive observations
5. Making a domain analysis
6. Making focused observations
7. Making a taxonomic analysis
8. Making selected observations
9. Making a componential analysis
10. Discovering cultural themes
11. Taking a cultural inventory
12. Writing an ethnography

This technique provided a practical and systematic framework for the analysis of different types of data collected in this project. At the same time, other more commonly used qualitative methods such as Miles and Huberman's (1994) techniques were employed to analyse tutor interviews and the students' module evaluation questionnaires. Over the course of the three projects, the DRS method was less rigidly employed as I became familiar with the emergent themes. Additionally, though the DRS method was useful as a systematic framework, it soon became apparent that the aims of this study did not require such detailed exploration of the groups' social intricacies and beliefs. As a result, I increasingly used focused observations in the second and third projects to explore the students' perceptions and engagement with the framework.

8.5 Project Descriptions

8.5.1 General Aims

All three action research projects have these general aims:

- To enable students to gain an awareness of cross-disciplinary influences on typography across media.
- To enable students to gain an understanding of the principles of type in relation to new media.
- To develop skills in the application of screen-based typography to the level where students are able to apply typography in a confident and informed manner.

As each project, settings and students were different, I had also identified specific objectives that were relevant to the respective needs of each set of students. These aims are listed together with the description of each project below.

8.5.2 Specific Programme Objectives

8.5.2.1 Multimedia Design Requirements (Action Research Projects 1 & 2)

After having pre-project discussions with the multimedia tutors, I identified three areas of concern relating to multimedia design students:

1. Lack of basic typographic training.
2. Student's apathetic attitude towards the subject of typography.
3. Increased demand for cross-media design skills.

Based on this context, objectives for the two action research projects conducted with multimedia design students were designed to focus on:

1. Increasing the students' level of typographic knowledge through formal (lecture-based) and practical (project-based) training.
2. Increasing the students' level of interest and engagement with the subject of typography through the introduction of cross-disciplinary themes.
3. Developing strategies to incorporate the delivery of typographic principles with new media principles.

8.5.2.2 Graphic Design Requirements (Action Research Project 3)

Similar to the multimedia design students, pre-project discussions with the graphic design tutors led me to identify three areas of concern relating to graphic design students:

1. Limited experience of screen-based media.
2. Increased demand for screen design skills.

3. Technical skills required for screen-based projects.

Based on this context, the objectives of the action research project conducted with graphic design students were designed to focus on:

1. Increasing the students' understanding of new media principles through formal (lecture-based) and practical (project-based) training.
2. Developing strategies to integrate the understanding of typographic principles with new media principles.
3. Ensuring that sufficient technical support is provided to the students.

8.5.3 Action Research Project 1: Pilot Study with Multimedia Design Students

8.5.3.1 Project Brief

The first action research project was used as a pilot study for this research phase. It was conducted in the second semester of the 2003/2004 academic year with second year multimedia students. This project was incorporated into the Graphic Edge 2 module (entitled Storyteller), which focused on the development of graphic creation skills. It was a six-week optional module, with three hour-long classes conducted twice a week. Students were asked to design a set of four paperback book covers, and two accompanying type-based interactive promotions. They were encouraged from the outset to consider both elements of the brief as an integrated project. The book jackets were a physical packaging and promotional element, while the interactive pieces were an online promotional element of the book. The design solution for both components must be conceptually linked and stylistically similar. The two typographic pieces must contain some elements of interactive storytelling and motion typography. Unlike the book jackets, students were not allowed to use any images or pictorial elements in their typographic pieces. They were given five authors to choose from: Bruce Chatwin, Milan Kundera, Ian McEwan, Gabriel Garcia Marques and Franz Kafka. Complete project briefs are located in Appendix 8.3.

8.5.3.2 Project Assessment

Students were assessed based on four design deliverables and one learning requirement[2]:

a. Design document
b. Book cover prototypes
c. Interactive typographic prototypes
d. Two A3 portfolio sheets

[2] These assessment criteria were based on pre-set multimedia design requirements. They differed from the graphic design programme, but had not created any anomaly in the research process.

e. Attendance

A design document supported the final design prototypes and contained the student's detailed description and evidence of the research, concepts and development undertaken for the project. This is a document where the student provides a commentary on the way his/her concept has been developed into a final design solution. It has to include evidence of research undertaken, copies of developmental sketches and examples of creative inspirations.

8.5.3.3 Project Schedule

Kathryn McKelvey was the primary tutor for this module. I undertook a secondary role, and was responsible for delivering typography-related lectures and supporting Kathryn during individual tutorials. Due to time constraints, I was only able to attend seven out of the twelve classes, usually once a week. As a result I was not able to chart the step-by-step development of some students. However, the overall impact on the data was minimal as the student's development cycles were weekly rather than daily. The complete schedule is listed in Appendix 8.4.

I presented four lectures in the first three weeks (refer to Appendix 8.2 for a sample of each lecture). The first lecture was used to introduce global typographic principles and issues, while the other three lectures presented ideas and concepts relating to three attributes of new media: hyper-textuality, interactivity and temporality. These lectures were designed to bring an awareness of cross-disciplinary influences on typography and increase understanding of type principles in relation to new media. Additionally, the cross-media nature of the project encouraged students to consider typography as a non-medium specific element, and to develop concepts that were suitable for different media applications.

8.5.4 Action Research Project 2: Multimedia Design Students

8.5.4.1 Modification from Pilot Study

Due to scheduling changes, the second action research project was conducted within the Graphic Edge 1 module (rather than the Graphic Edge 2 module), in the first semester of the 2004/2005 academic year. It was conducted with a new group of second year multimedia students. The project brief for this module was similar to the previous brief from the pilot study. After reviewing the outcomes of the pilot study project, several changes were made to the brief and schedule of this module. These modifications evolved from discussions between the primary tutor and myself. We believed that these changes would improve the quality of the students' experience and learning. We concluded that the problems encountered during the delivery of the pilot module were:

1. **Media separation**

   Students lacked experience and knowledge in the development and application of a design solution across different forms of media.

2. **Incomplete design process**

   There was a lack of experimentation and concept development throughout the class. Initial research and inspiration was not followed through to the design execution.

3. **Lack of design influence understanding**

   There was a lack of contextual understanding relating to current influences in art, design and literature. Design examples and visual imagery referenced in the students' designs were often used out of context.

4. **Poor time management**

   There was an imbalance of time spent between the book jacket and the type project, resulting in weaker design execution and finish for the latter.

5. **Digital reliance**

   Students were overly reliant on the computer to generate artwork. Most students were reluctant to experiment using non-digital material.

As a result, modifications in several areas were made for the second action research project and they were:

Project brief

- A pre-project exercise was introduced. Students were asked to select five well-known graphic designers and to research their philosophies, design processes and influences. They were asked to design a postcard for each designer as homage to their selected designers. This brief exercise was designed to increase the student's sphere of design influence and to increase their familiarity with print techniques.

Project structure

- A delivery date for the design and production of the book jackets was introduced.
- A lesson plan was devised and distributed to students. It detailed the content of each lesson and specified where students needed to be in their design process.
- The delivery of the lectures was spread over a three-week rather than a two-week period, to allow students time to absorb the materials. The timing of the lectures coincided with the students' concept and design development period, to provide continuous inspiration and ideas.

Project materials

- The type lectures were expanded to introduce some historical context and deliver basic typographic principles, specifically on text typography.
- The four typographic aspects were given more prominence and were emphasized in the type lecture.
- More demonstrative and engaging material was introduced, for example, using Erik Spiekermann's[3] video (1990), to introduce the idea of cultural identity through the selection of appropriate typefaces.

Tutorials

- The importance of concept development was emphasized. Students were encouraged to spend time on the development of their concept, and to ensure a successful application across both print and screen media.
- During the second action research project, I was present for a majority of the lessons. This improved the quality of the student tutorials, and reduced the expertise separation between the primary tutor and myself.

Project assessment

- Students were required to keep a sketchbook. They were encouraged to use it as a way to document and expand on their design process, as well as to reduce their reliance on digital tools for source material creation.

8.5.4.2 Project Brief

The project brief for the Graphic Edge 1 module was almost identical to the Graphic Edge 2 module delivered in 2004. The only changes we made were in the list of authors for students to choose from. The new list included: Irvine Welsh, Milan Kundera, Martin Amis, Italo Calvino and Orhan Pamuk. The complete brief is located in Appendix 8.3.

8.5.4.3 Project Assessment

Compared to the first action research project, students were asked for two additional submissions: promotional postcards of graphic designers, and their personal sketchbooks. The postcards were a short exercise given prior to the start of the Graphic Edge module, while sketchbooks were introduced to encourage students to draw and visualize their ideas directly instead of relying solely on digital tools for idea development.

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[3] Erik Spikermann is a well-known German typographer and type designer who founded the multi-disciplinary design consultancy MetaDesign in Berlin, 1979.

8.5.4.4 Project Schedule

Kathryn McKelvey remained the primary tutor for this module. Similar to the first action research project, I undertook a secondary role and was responsible for delivering type lectures and supporting Kathryn during individual tutorials. The module was condensed from six to five weeks, with a three-week Christmas break slotted between the fourth and fifth week. We had to consider the potential disruptive nature of this Christmas break, and therefore required the completion of the book covers before this break. This allowed students to concentrate fully on the type project after the break and avoided the problem of time shortage. However, although this was successful to some extent, there were still some students who were unable to complete the two required interactive type projects. The complete schedule is listed in Appendix 8.4.

8.5.5 Action Research Project 3: Graphic Design Students

8.5.5.1 Project Brief

Background

The project brief for the third action research project was to some extent pre-determined by the first part of the Digital Media module conducted in the previous semester. Students were asked to interpret and create digital assets based on their interpretation of 'Beowulf', a 7th to 10th century Anglo-Saxon poem. The students' tasks were to analyse and convert their understanding of the poem into a range of digital assets such as images, text, video and sound, with the potential to develop them into a range of different design solutions. I was not involved in this part of the brief.

Project Brief

My involvement began in the second half of the Digital Media module, where I delivered lectures relevant to screen-based typography and supported student tutorials with my typographic expertise. Students were also asked to concentrate on developing a typographic element to complement their existing digital assets. This brief was divided into three components:

1. Teaser trailer
2. Interactive website
3. CD-Packaging

Students were asked to work individually to design and build an interactive website showcasing a thirty-second 'teaser' trailer for a fictional film entitled 'Beowulf'. The trailer (which could be animation or video-based) must be 80% typographic and 20% image-based. In comparison, no restrictions were set for the interactive website or the CD packaging.

8.5.5.2 Project Assessment

Students were assessed on four criteria:

1. Packaged CD containing a teaser trailer, a fully functional website and a CD containing the digital development work.
2. Sketchbook of ideas, experimentation and concept development work.
3. Typewritten rationale outlining the student's approach and solution to the brief.
4. Full attendance at all taught sessions.

8.5.5.3 Project Schedule

The Digital Media module was designed as a three-week intensive module. Unlike the multimedia programme, which runs a multi-module structure, the graphic design programme follows a single module system. As this was the only module that the students were involved in for the whole duration, they were expected to devote their entire time to it.

The four lectures that I developed for this research phase were delivered in the first week of the module. The primary tutor (Ted Carden) believed that it would be better for students to attend the lectures in the first week, allowing the second and third week to be devoted to the development of their practical work. This allowed them to generate and incorporate ideas from the lectures during their early concept development stage. I was initially concerned about the frequency of the lectures and recommended spreading the delivery over two weeks. However, Ted assured me that the students were used to attending hour-long lectures and as my lectures were about 30 minutes each, he believed that this would not be a major problem. On reflection, the delivery of the lectures within the space of a week made sense due to the intense nature of the module. Students were more likely to apply the ideas gained from the lectures during their intensive conceptualizing stage than they might be in their design and production stage, where technical and software skills were more essential. The complete schedule for this module is listed in Appendix 8.4.

8.5.5.4 Modifications from Action Research Projects 1 & 2

The third action research project structure and brief was quite different from the first two projects. This was due to two factors:

1. **Differences in programme structure between multimedia and graphic design**
   The multimedia programme is structured as concurrent modules running in six week sections, with each section focusing on one specific design aspect, for example Publishing. Multimedia students will generally have three projects running at the same time. In contrast, the graphic design programme is structured as consecutive single

modules. Each module operates as an intensive 3-week project. The intensity of pace and contact time required for the Digital Media module (from the graphic design programme) meant that my time spent with students was intermittent rather than constant. I met with students based on their individual requests during a set period of time, rather than being present throughout all tutorials. As a result, I was only able to observe and participate in a random sample of student tutorials.

In addition, the Digital Media module was made up of two 3-week sections. This made it difficult to isolate the action research project into a module of its own. The decision to run it within the Digital Media module was ultimately based on matching the aims of the action research project with the aims of the module.

2. **Restructuring of the multimedia design programme**
   As the multimedia design programme is a relatively new programme (in comparison with other, more established, programmes at Northumbria), its structure has evolved consistently to reflect the changing needs of the subject. As a result, the programme had undergone a restructuring for the academic year of 2002/2003. New modules were created with a focus on more cross-media projects in specific genres, for example, Promotion Design, Entertainment Design, Publishing Design and Innovation Design. This restructuring provided me with the opportunity and flexibility to devise and conduct a project within the Graphic Edge module, which was focused on expanding the student's experience of graphic design concepts and processes.

These two factors resulted in the modification of the project brief and output for the graphic design students. These modifications and their implications are listed in Table 8.2.

Modifications made for Action Research Project 3	
Action Research Project 3 (graphic design students)	**Action Research Project 1 & 2 (multimedia design students)**
1. Type-focused solution Students were permitted to use images in their teaser trailer although its usage was limited. The majority of the design elements had to be typographic. However, no restrictions were set for the interactive website or the CD packaging. *Implications* This introduction of images at such a low proportion did not have an adverse effect on the analysis of the students' communication strategy using typography. Attention was paid to the way the images were used and whether this had affected the way typography was applied.	**1. Type-only solution** Students were not allowed the usage of any imagery in their interactive type project. They were, however, allowed to use basic graphic elements such as lines and shapes.
2. Specialized rather than general tutorial As this was not an optional module, there were a total of 40 students. As a result, my contact with students was intermittent and dependent on their needs. This meant that tutorial time was focused on typographic issues and technical problems, rather than the students' overall design development. *Implications* The researcher was less able to judge the development of the students' concepts and to observe their cross-media design process.	**2. General tutorial** I was able to be present for all the tutorial sessions in the second action research project due to the low number of students – 10. This meant that I was able to observe discussions relating to the students' overall project and progress.

Table 8.2. Modifications Made for the Action Research Project 3

Prior to this project, I discussed the possible effects of these modifications on the final outcomes of the project with my supervisors. We concluded that that these modifications were justified based on the differences between the design programmes. The analysis would be focused on how students applied their typography, as well as their understanding of medium-specific requirements through their application of new media principles. Ted and I worked closely to determine which projects were more successful in their typographic application and were

subsequently used as a benchmark for other projects. Table 8.3 summarizes the differences between the three action research projects.

Variables	Action Research Project 1: Pilot Study	Action Research Project 2: Multimedia design students	Action Research Project 3: Graphic design students
Module	Graphic Edge 2	Graphic Edge 1	Digital Media
Semester	Semester 2 2003/2004 academic year	Semester 1 2004/2005 academic year	Semester 2 2004/2005 academic year
Year group	11 students	10 students	40 students
Module time frame	6 weeks	5 weeks	3 weeks
Maximum student contact hours with tutors	36 hours in total	20 hours in total	Daily for three weeks
Student contact hours with researcher	24 hours	25 hours	19 hours
Project materials	4 Lectures 1 type exercise	4 Lectures	4 Lectures
Project structure	Joint delivery date for book jacket and type promo	Staggered delivery date for book jacket and type promo	Delivery of film title sequence and website. CD Packaging was completed by the end of the semester.
Project Assessment	1. Design document (research, concepts and development) 2. Book cover prototypes 3. Interactive typographic prototypes 4. Two A3 portfolio sheets 5. Attendance	1. Postcards 2. Sketchbook 3. Design document (research, concepts and development) 4. Book cover prototypes 5. Interactive typographic prototypes 6. Two A3 portfolio sheets	1. Film title prototype 2. Website prototype 3. CD packaging prototype 4. Design rationale 5. Sketchbook 6. Attendance

Table 8.3. Comparisons Between Action Research Project 1, 2 and 3

8.6 Emergent Themes

8.6.1 Type Knowledge

8.6.1.1 Assessing the Level of Typographic Knowledge

In order to design a brief and prepare teaching materials that were appropriate for the requirements of the students, their levels of typographic knowledge were assessed prior to the project. Additionally, post-class assessment was conducted to evaluate the level of progress made by the students during the course of the project.

Using Uluoglu's (2000, p.39) design knowledge model, typographic knowledge can be described under four areas: (i) *categories*, (ii) *structure*, (iii) *representation* and (iv) *content*. *Categories* consist of the lexicon of concepts and terms used to describe things and events. They may be relevant to the description of objects (for example form, geometry, dimension and texture) or to the subject (for example function, action, requirements, needs and style). *Structure* refers to the manner in which knowledge is structured, connected and understood. *Representation* is the way knowledge is transmitted through verbal form (declarative and normative) and applied in visual form (final product). *Content* is dependent on the qualitative and quantitative aspects of the three areas before. The number and depth of concepts (in the form of examples) that exist in the lexicon of a designer has an effect on how that concept is interpreted. Similarly, as Uluoglu (2000, p.45) explains, the qualitative manner in which a designer structures and attaches meaning to a concept is different and based on personal experiences and knowledge.

Assessment methods were designed to collect information about these four areas of typographic knowledge, and can be divided into pre and post-class methods:

Pre-Class

1. Reviewing existing typographic modules offered by the respective programmes *(structure, content)*
2. Conducting pre-class interviews with the programme tutors *(representation, content)*

Post-Class

1. Evaluating the results from the students' module evaluation questionnaires *(content)*
2. Conducting post-class interviews with the programme tutors *(representation, content)*
3. Observation of tutor and student tutorial discussions *(categories, structure, representation, content)*
4. Reviewing the final submitted projects *(representation, content)*

8.6.1.2 Multimedia Design Students

Pre-class knowledge

Typographic knowledge amongst second year multimedia students was less in-depth in comparison with their graphic design counterparts. This was a result of a lack of specialized typographic modules for first year students. Although students had some experience working and using type in their design solutions, they still lacked any formal and theoretical understanding of the subject. As a result, they found it difficult to rely solely on typographic elements to communicate their concepts. Although students did not demonstrate a specific interest in the subject, they recognized the importance of it.

An increase in basic typographic knowledge and awareness of communication strategies

According to Oxman (2003, p.65), competence in design praxis is not necessarily measured by the quantity of knowledge gained, but rather where it is used, which specific knowledge is applied in context and how to use it when it is needed. Therefore, the assessment of the students' post-class typographic knowledge is focused primarily on how they have applied acquired knowledge in their design solutions, rather than accessing their quantity of knowledge through formal testing.

Both students and tutors acknowledged that the level of typographic knowledge had increased by the end of the project. They considered the type-specific lecture to be one of the main contributing factors to this increase. This lecture was designed to introduce the different communication aspects of typography, and was based on the premise that typographic knowledge is much easier to understand in relation to communication rather than technology-based principles. This approach was reinforced throughout the module. Students were introduced to the four typographic aspects derived from the cross-media typographic framework as form, content, expression and context. Whilst the value to student learning may be difficult to measure, the lecture was successful in introducing alternate approaches to typography. Students' comments regarding the value of this lecture included:

> 'Good eye opening examples of how powerful text can be.'
> 'It gave me a better idea of what kind of type to use to suit my piece.'
> 'It showed what could be done with type.'
> 'The type lecture helped me see the use of type in a different way, which will help me throughout the course.'

Relevance to subject and discipline knowledge

Out of the four lectures delivered (type, hypertext and hypermedia, temporality and interactivity), students rated the type lecture to have the highest relevance to the development of their interactive type project, as well as to their overall knowledge of multimedia design. This was a revelation, as the study initially hypothesized that the new media lectures (and not the type lecture) would contribute more towards the students' knowledge of multimedia design. It appears to have raised their awareness of typographic issues and increased their desire for more formal typographic instruction.

Expertise brought in by the researcher

Apart from the type lecture, students found that the joint tutorials were also important in their learning process. According to the tutor, the formal knowledge and experience that I brought was a valuable addition to the class. The rapport built up with the multimedia tutor was also a contributing factor, as we became familiar with each other's teaching style and approach. We were able to reinforce each other's opinions, as evident from the tutor's comment that we were 'singing from the same hymn sheet', but at the same time offered different approaches to a problem.

8.6.1.3 Graphic Design Students

Pre-class knowledge

The level of typographic knowledge amongst second year graphic design students was considered by the tutors to be mixed and fairly rudimentary. Students had a basic grounding in typographic principles and were able to use typography as a graphic object. However, they lacked holistic understanding of its principles and often felt intimidated by its 'rules'. Though basic, their levels of knowledge were not considered to be abnormal for second year students. Graphic design tutors were generally satisfied with the current level and depth of typographic knowledge delivered by the programme, however they acknowledged that it could be improved. For example, more effort could be put into bridging traditional typesetting with digital processes, and developing more projects relating to motion typography.

In comparison with the multimedia students, graphic design students have a better grounding in the basic principles of typography. They had the ability and interest to experiment with typographic form, and often created personalized typefaces for their projects. During the project, students demonstrated an understanding of cultural and historical references to typographic styles, and were generally successful in selecting appropriate typefaces to reflect the time period of the Beowulf poem.

An increase in basic typographic knowledge

Based on the module evaluation questionnaire, students acknowledged that there had been an increase in their typographic knowledge. Specifically, a quarter of the students believed that the project had informed them on new ways to apply typography in a screen-based environment.

Relevance to discipline knowledge

Although the type lecture was not considered to be as relevant as the new media lectures in relation to the requirements of the project, students recognised that typography is an essential skill for the discipline of graphic design. Unlike their multimedia counterparts, graphic design students considered typography as a required fundamental skill.

Introduction of typographic application in screen-based media

The projects developed for the graphic design students were aimed at broadening their understanding of typography in screen-based media. This strategy enabled them to transfer their knowledge of print typography into screen more effectively. The lectures were successful in increasing awareness of new media principles and introducing new ideas to the students. Despite efforts to use typographic examples to demonstrate the principles of new media, students did not exhibit an understanding of the connection between typography and new media principles. Unsurprisingly, their approach to screen-based reading and narrative delivery was still very much based on a print model. This was especially evident in the movement and timing of the typographic trailers. Generally, the pacing was too slow and the textual elements were often presented as static elements.

8.6.2 Typographic Skills and Application

Casakin and Goldschmidt (1999, p.153) state that 'skill is the single most important hallmark of expertise in any domain'. They attribute the difference between a novice and an expert to how knowledge is represented and structured. Experts are much better at relating their knowledge to past experiences and are able to encode knowledge in terms of functional and abstract principles.

In the first part of the project, students were introduced to the four categories of global skills derived from different communicative aspects of typography. This approach became a teaching strategy throughout the project, aimed at providing students with a holistic understanding of typography, free from technical and medium-related preconceptions. According to Oxman (2003, p.65) if knowledge is structured and coded in a way that is easily accessible and usable, it is more likely to be used. By engaging with these four areas, students should be better able to grasp global principles and apply typography across a spectrum of media.

The students' final projects were analysed to explore how they understood these principles and subsequently applied their understanding. Their typographic applications were assessed according to the quality of execution, and how successful it was in meeting the communication objective of their design idea and solution. Four sets of questions were drawn up as an evaluation guide and to help determine the areas of application. This checklist is listed in Table 8.4.

Typographic Aspects	Checklist for the analysis of the students' projects
FORM	• Were letterforms used to create a non-representational form or composition? • Were words used to create a non-representational form or composition? • Were sentences and paragraphs used to create a non-representational form or composition? • Was the form of the letter used as the main communication device? • Did graphical elements in the piece refer to letterforms or words? • Did the piece challenge our perceived idea of a letterform? • Was the letterform detached from its linguistic role? • Was there any metonymic substitution in the piece? (If yes, points to usage of form to generate secondary meaning) • Was there any metaphorical reference in the piece? (If yes, points to usage of form to generate secondary meaning) • Was there any figurative reference in the piece? (If yes, points to usage of form to generate secondary meaning)
CONTENT	• Has type been used as text (words that have been handwritten, typed, or printed)? • Has type been used as heading (something that forms the head, top, edge, or front of something, especially as a title to indicate the start of a paragraph, section, chapter or page)? • Has type been used as signage (a public display notice or board bearing directions, instructions or warning)? • Was the text legible? • Was the text readable? • Was there a clear hierarchy of information? • Did the layout of the text suit the delivery media? • How well was the type integrated with the other design elements?
EXPRESSION	• Was the choice of typeface and the typographic layout relevant to the communicative purpose based on an *historical*, *stylistic*, *visual* or *expressive* association? • Was typography used in an expressive manner (communicating a particular emotion and meaning relating to the text)? • Was type used in an iconic manner (a symbol that is universally recognized as a representation of an idea, concept, era, culture etc.)?
CONTEXT	• Was there a manipulation of the language (through sounds, syllables, words, word sequence, punctuation, grammar, syntax) to alter meaning? • Was there a manipulation of the relationship (expectations and roles) between the reader/user, the text and the medium to alter meaning? • Was there a manipulation of the narrative sequence using techniques from form, content and expression aspects? • Was the message of the piece contained within the semantic qualities of the text?

Table 8.4. Typographic Evaluation Criteria for the Students' Projects

8.6.2.1 Typographic Aspect: Form

Although this category is considered within education as the most fundamental level of type understanding, the analysis has revealed that this category of typographic application does not occur at a novice level. Rather, it is evident in users who have attained a greater confidence and awareness of typographic issues. It occurs predominately at more advanced levels of understanding, due to the high intuitive, aesthetic and technical requirements of this category. As a result, achieving success using strategies and skills derived from this category is difficult without the right level of skill and understanding.

8.6.2.2 Typographic Aspect: Content

This was the most commonly applied category evident in the students' projects. This result was predicted as type is often thought of as a visual representation of language. Its usage was consistently high throughout the different levels of skills. Only the quality and effectiveness of the typography changed according to the individual's skill levels, in particular the legibility, readability and aesthetic qualities.

8.6.2.3 Typographic Aspect: Expression

The expression aspect was the second most commonly applied category amongst the students. Students enjoyed using typography as an expressive element where they did not feel the need to follow traditional typographic rules. Students were more interested in experimenting and expressing their ideas through typography, where its evaluation is based on emotional rather than formal qualities.

8.6.2.4 Typographic Aspect: Context

Weaker students (with less developed design and conceptual skills) were unable to engage with contextual issues. This is possibly due to the fact that applying type in this manner requires a deeper understanding of how language, medium and user interact. Its occurrence in print was less frequently observed than in screen-based media. An interactive, screen-based environment is probably more conducive to the manipulation of medium, meaning, language and interpretation due to its collaborative, open-ended and interactive possibilities.

8.6.2.5 Expertise Levels

Levels of student typographic understanding and application were mapped using Hubert Dreyfuss's (2002; 2003a; 2003b) model of expertise development. According to Dorst (2004), Dreyfuss's model is widely used in professional education that takes the development of skills as

the starting point for a model of learning. Dreyfuss's model consists of seven distinct levels of expertise and Dorst (2004, p.71) summarizes these as:

1. Novice

A novice will consider the objective features of a situation, and will follow strict rules to deal with the problem.

2. Advanced beginner

For an advanced beginner the situational aspects are important, and maxims are used for guidance.

3. Competent

The competent problem solver selects the elements in a situation that are relevant, and chooses a plan to achieve the goals.

4. Proficient

The proficient designer immediately sees the most important issues and appropriate plan, and then reasons out what to do.

5. Expert

The expert responds to a specific situation intuitively, and performs the appropriate action, straightaway.

6. Master

The master does not take these 'expert' ways of working for granted anymore, but sees them as contingent.

7. Visionary

The visionary searches for the anomalies, the strange and innovative ideas and developments at the edge of established fields that could revolutionize its practice.

Dorst (2004) has found empirical evidence to support the first three levels of expertise in design education. He conducted a long-term study using self-evaluation documents that an industrial design student produced for the first three years of undergraduate study. Based on classroom observations and final project evaluation, two levels of design expertise were evident for this action research project; novice and advanced beginner. As a result, this study combines Dreyfuss's

(2002; 2003a; 2003b) expertise development model with Uluoglu's (2000) design knowledge model introduced in Section 8.6.1.1[4], to describe the students' levels of typographic knowledge. The description of typographic knowledge is presented in Table 8.5.

Level of typographic knowledge	Description of Typographic Knowledge			
	Categories	Structure	Representation	Content
Novice	Low knowledge of specialist terms. This results in the use of a lexicon from generic design concepts to describe typographic objects.	Considering the communication strategy (function) and their techniques/ methods (form) as separate.	Based on existing functional examples. Using the form without specific relevance to communication strategy.	Low
Advanced Beginner	Increased knowledge of specialist terms. Using a mixture of specialist terms and generic terms to describe typographic objects.	Making conceptual connections between different specific communication strategies and their techniques and methods.	Beginning to synthesize knowledge and apply techniques from the different aspects. Using existing techniques for different communication roles.	Medium

Table 8.5. Levels of the Students' Typographic Knowledge

Students' projects were evaluated on their typographic communication intent and the quality of their final design solutions using Dreyfuss's (2002; 2003a; 2003b) and Uluogo's (2000) design knowledge models (refer to Table 8.5). Table 8.6 illustrates the result of this evaluation through the mapping of expertise level with each typographic aspect.

Level of Expertise	TYPOGRAPHIC ASPECTS			
	Form	Content	Expression	Context
Novice	None	Low	Low	None
Advanced Beginner	Low	Medium	Medium	Low

Table 8.6. Mapping Students' Understanding and Knowledge in Each Typographic Aspect

[4] *Categories* consist of the lexicon of concepts and terms used to describe things and events. They may be relevant to the description of objects (for example form, geometry, dimension and texture) or to the subject (for example function, action, requirements, needs and style). *Structure* refers to the manner in which the knowledge is structured, connected and understood. *Representation* is the way the knowledge is transmitted through verbal form (declarative and normative) and applied in visual form (final product). *Content* is dependent on the qualitative and quantitative aspects of the three areas above.

This analysis revealed a potential difference between a student's actual sequence of knowledge acquisition, and the prescribed sequence of knowledge delivery in typographic education. Current typographic education is based on the premise that the learning of typography should be modelled according to the structural breakdown of language, starting from individual letters, to words, to sentences, to paragraphs and finally to pages. Students are expected to learn the basic forms of the letters before learning their communicative function. However, this analysis has revealed that students do not always comprehend typography from its most basic form; rather, they see it first and foremost as a way to represent written language (*content*). Comprehension and application of the *form* category surfaces at the *advanced beginner* level where students are able to explore beyond the maxims of text typography, for example the issue of textual proportion (which includes type size, letter and word spacing, line height and line length). Similarly, exploration in the *context* category occurs when students begin to synthesize the situational aspects of their design problem, in this instance, understanding the relationship between medium, users and message.

8.6.3 Design Process

8.6.3.1 Linear Design Development

In a complete design process a student would go through several cycles of design development which, according to Jones (1992, p.63), include three essential stages of analysis, synthesis and evaluation in order to arrive at a successful design solution. Cross (1997, p.439) identifies oscillations between stages as the creative element of design, rather like bridging the chasm between problem and solution. These oscillations allow critical reflection on sub-problem and sub-solution, allowing designers to adopt a solution-focused strategy while tolerating uncertainty and incomplete information. Observing the students' design processes has revealed that the oscillation process rarely occurred. In some extreme cases, some students even ignored the design development stage and progressed directly into the production stage. This linear process described by Newstetter and McCracken (2001) as 'design routinization', is one of the five features of novice design activity they have identified. In relation to this study it resulted in concept development that overtly focused on one medium, and an inability to translate concepts across different situational aspects. This ultimately affected the quality of the typographic application and is seen to be a contributing factor towards a student's ability to engage with the typographic framework.

Figure 8.1 illustrates a visual communication model representing a cross-media design process that has been derived from the design process studies of Jones (1992), Cross (1997) and Wright (2004), while Figure 8.2 reflects the actual design process of the students in this study.

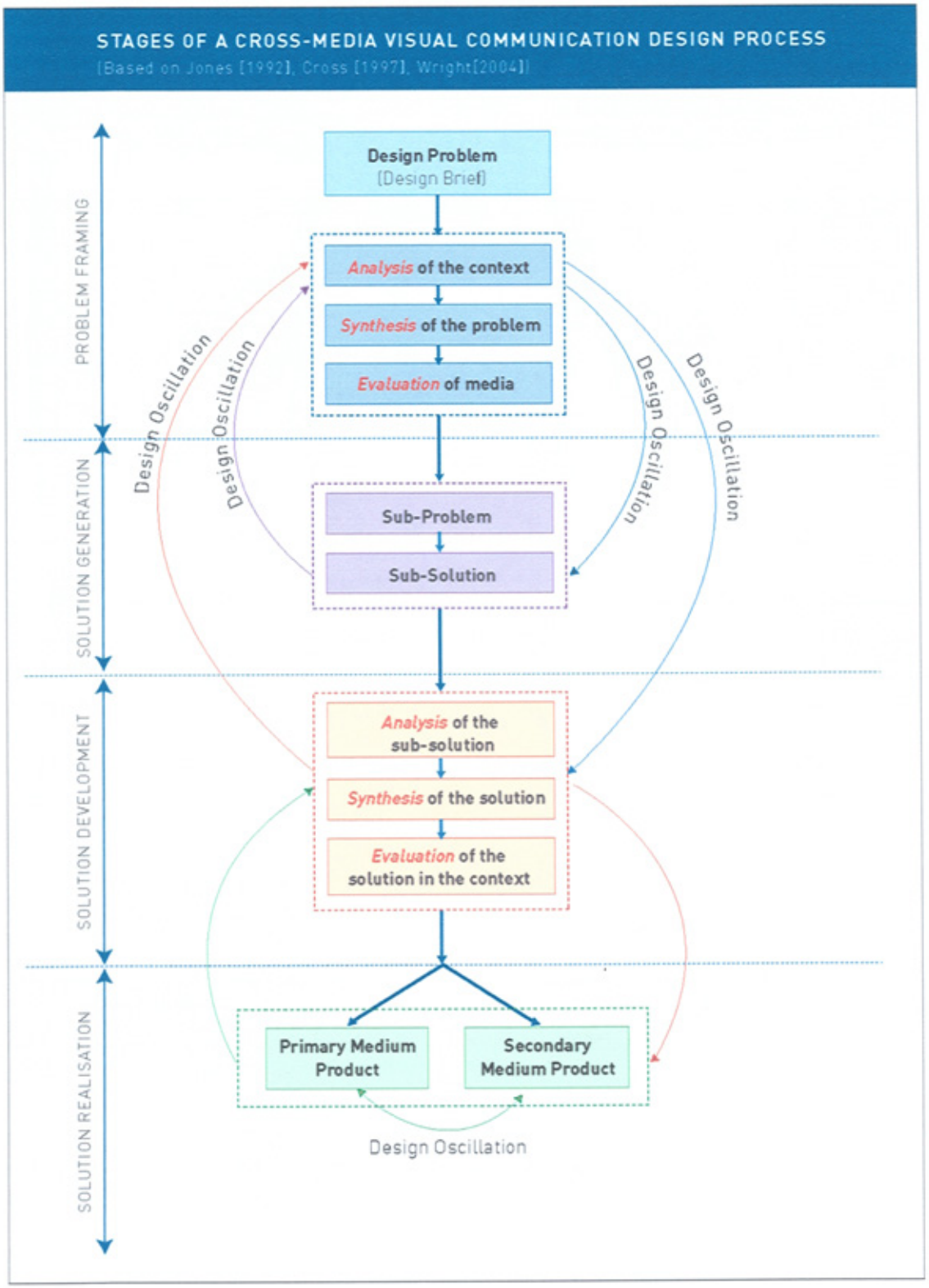

Figure 8.1. Stages of a Cross-Media Visual Communication Design Process

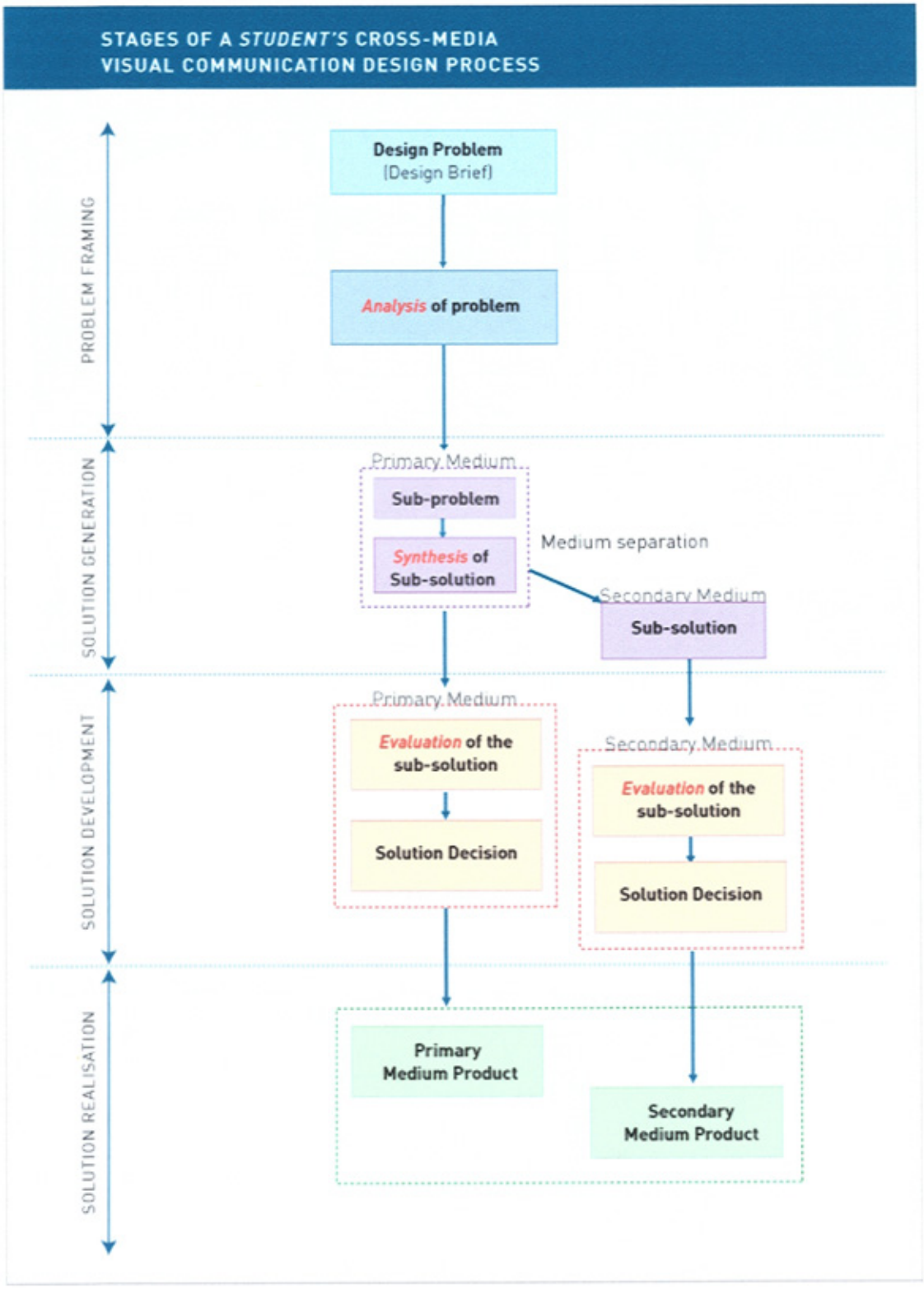

Figure 8.2. Stages of a Student's Cross-Media Visual Communication Design Process

8.6.3.2 Medium-Specific Concept Generation

Reflecting the current industry trend, where design consultancies are expected to deliver integrated design solutions across media, both the multimedia and graphic design programmes have begun to introduce cross-media projects. For example, the first and second action research projects required the multimedia design students to promote books using online and offline media. Similarly, the third action research project required graphic design students to produce complementary forms of cross-media assets based on their interpretation of the literature classic Beowulf. Although the briefs for the two programmes were entirely different, their requirements were similar; an integrated design solution that could be applied across various media.

This requirement for cross-media concept generation has revealed gaps in the students' design process, particularly amongst the multimedia design students. They were required to present three integrated concepts and had to develop design solutions that were conceptually linked and stylistically similar. However, most of the presented concepts were dependent on the medium of transmission and failed to provide an integrated solution for both components. Concepts for print and screen were often considered and presented separately. The students' failure to apply concepts across media revealed their inability to abstract or remove the characteristics common to other medium-specific ideas. For example, one student presented a series of print finishes for the book jackets as a concept. Unsurprisingly, this 'concept' would be difficult to translate into the screen medium without further abstraction.

8.6.3.3 Design Jumps

Students were often operating on only two levels of abstraction, moving straight from their first idea (functional) into a material solution in the form of a product within a specific medium (structural). This activity, described by Newstetter and McCracken (2001) as 'design jumps', meant that students often made huge assumptions about an idea without having gone through the required stages of problem formulation and solution generation. They were often unaware of the implications, leading them to incomplete design solutions. These design jumps occurred in both sets of multimedia and graphic design students, and are commonly linked with novice behaviour (Newstetter and McCracken, 2001).

8.6.3.4 Concept Attachment

Students tended to focus on one primary solution and were reluctant to move away from their original idea. Whilst this is a general trait found in both experienced and novice designers, it is especially evident with novice designers as they are generally less able to alter this concept successfully to achieve the best solution (Newstetter and McCracken, 2001; Cross, 2001; Cross,

2004). In all three action research projects, students were reluctant to review their concepts due to three main factors: their belief in the quality of their solution, their concern regarding timing and their fear of experimenting with different media and tools.

8.6.3.5 Implications

This incomplete design process made it difficult for most students to translate their idea into a cross-media solution. The lack of a developed design process (specifically for the multimedia students) affected the quality and application of their typographic skills, making it more difficult to assess their comprehension. These excerpts from my field notes[5] illustrate the weaknesses encountered in the students' design processes.

> *Entry on the 24th of February 2004*
> Students approached the concept with a medium in mind, beginning with the book jackets and then trying to fit their concept for their interactive type piece. They did not approach it as one universal concept for both media. Most did not develop three concepts (which was the requirement), instead they have one primary concept but presented in different visual styles.

> *Entry on the 26th of February 2004*
> Conceptually, the students are shying away from the more experimental ideas. They are choosing the easier option, using stock images rather than creating their own imagery. Again, concepts shown by Paul and Komo were weak and styles were disguised as concepts.

> *Entry on the 8th of December 2004*
> Pam and Caroline seemed confused and unsure about how to develop a concept for a series. They are too used to associating a graphic solution to a concept. They do not understand the separation between style and concept. They have yet to develop an understanding and skills to achieve design coherence using different graphic elements.

8.6.4 Relevance of New Media Principles

8.6.4.1 Principles of Interactivity

Three additional lectures were developed to complement the type lecture; each one focused on one specific new media characteristic: hypermedia, interactivity and temporality. These were aimed at introducing relevant new media characteristics, and providing examples of their use in relation to typographic applications.

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[5] A selection of the field notes are located in Appendix 8.5.1.

At the end of the project, students were asked to rate[6] the lectures through a module evaluation questionnaire according to two criteria: the lecture's relevance to the project, and its relevance to the student's discipline knowledge (either multimedia or graphic design knowledge). Table 8.7 shows the combined result from the three groups of students. Amongst the three new media lectures, the Interactivity lecture was generally perceived to be most relevant to students' understanding of typography and their own subject area. In contrast, the Hypermedia and Temporality lectures were second and third respectively.

The importance attached to the principle of interactivity, however, is not evident from the students' final output. Their work involved equal application of techniques and principles from across the three principles. The level of interactivity was generally low, and limited to user control interaction. This could be due to the technical ability of the students; often many struggled to create the level of interaction first imagined at the conceptual stage. In conclusion, it is evident that interactivity is at the forefront of the students' intent when thinking in terms of screen-based projects. However, due to the complexity of the subject and the high technical skills required, students have found it difficult to achieve the level of interactivity they aspired to in their final design actualization.

Combined Lecture Ratings of the Three Groups of Students			
Relevance to the development of the module project		**Relevance to overall knowledge of student's discipline knowledge**	
	Mean Rating		*Mean Rating*
Type Lecture	1.8	Type Lecture	1.8
Interactivity Lecture	1.9	Interactivity Lecture	2.3
Hypermedia Lecture	3.1	Hypermedia Lecture	2.67
Temporality Lecture	3.2	Temporality Lecture	2.85
Legend: 1 - Most relevant | 4 - Least relevant			

Table 8.7. Combined Lecture Ratings of the Three Groups of Students

[6] The ratings range from a rating of 1 to indicate the most relevant lecture to a rating of 4 to indicate the least relevant lectures.

8.6.4.2 Relationship to Typography

Students were asked to rate the lectures based on how relevant they believed they were to their project development and general discipline knowledge. Results in Table 8.8 surprisingly show that all three sets of students rated the type-related lecture as the most relevant lecture for the development of their discipline knowledge. Type principles are seen to be valuable towards the overall development of the students' discipline knowledge, rather than only towards this typographic project. This view supports the strategy of the cross-media typographic framework, where students are more likely to comprehend and apply screen-based typography successfully if its delivery relates to principles closely linked to screen-based attributes.

Relevance towards student's overall discipline knowledge					
	AR 1 Mean Scores		**AR 2 Mean Scores**		**AR 3 Mean Scores**
Type	1.67	Type	1.67	Type	2.11
Interactive	1.83	Hypertext	2.11	Interactive	2.42
Hypertext	3.17	Time-Based	2.44	Hypertext	2.68
Time-Based	3.33	Interactive	2.67	Time-Based	2.79
Legend: 1 - Most relevant | 4 - Least relevant					

Table 8.8. Comparisons of Lecture Ratings Relating to Discipline Knowledge Amongst Student Groups

8.6.5 Technical Proficiency

In a medium that is so dependent on digital technology, it is not surprising that one of the main stumbling blocks students encountered during these projects was their lack of software and programming skills. It seems to be a common problem across the two programmes. The result of the evaluation questionnaire (filled in by students at the end of the module) showed that 55% of the multimedia students and 20% of the graphic design students believed that the technical requirements of the project detracted from their learning. Both sets of students had different views relating to the technological requirements. Multimedia students were concerned with learning complex programming skills to produce highly interactive pieces, while the graphic design students were generally concerned with basic programming skills in order to translate their ideas into simple interactive pieces. Additionally, observations of both sets of students have revealed that multimedia students tend to place more importance on the production than the developmental aspect of a project. These differences could explain the higher percentage returned by the multimedia students.

Students often mistakenly equate complex interactivity with high levels of programming skills. Ideas would often be dismissed if the technical challenge required to execute them were deemed too difficult. As a result, many potentially interesting concepts were discarded in favour of safer and easier to produce options. Although a lower percentage of graphic design students felt impeded by the technical requirements compared to their multimedia counterparts, their lack of basic technical skills made it more difficult for them to translate their design concepts into interactive pieces. Some graphic design students felt severely limited by this requirement, as evident by some of their comments:

> 'I would have enjoyed this project if we had a longer duration. I felt limited as I had to learn programmes before I could progress.'
> 'Everything was useful to learn but as I am new to web and animation, it was a lot to learn how to do both in just three weeks.'

8.6.6 Differences between Multimedia and Graphic Design Students

8.6.6.1 Medium Experience

The lack of experience of designing for different media was one of the main factors that determined how successful the students' projects were. This problem was much more acute with the graphic design students. They had difficulty understanding and relating to the screen medium without relying on their print design model. Their narrative and motion-based skills were poor and often based on print's spatial and temporal model. In contrast, the multimedia students had additional experience designing for the print medium and were more successful in transferring their multimedia skills to their print project.

8.6.6.2 Software Skill Transference

Multimedia students had less difficulty transferring their software skills to print-based media. Multimedia students were already familiar with popular desktop publishing programmes (such as Adobe Photoshop, Illustrator and InDesign) and were using them regularly in their projects, whereas software required for multimedia projects are more specialized and most graphic design students were unfamiliar with them.

8.6.6.3 Design Process

The graphic design students demonstrated a more developed approach to two areas of the design process: problem framing and solution generation. Their problem framing process involved a wider and more thorough search for historical, social and cultural references. Additionally, their solution generation process was much more iterative than their multimedia counterparts. In

contrast, the multimedia students did not spend enough time researching the requirements of the brief and often made design jumps (Newstetter and McCracken, 2001) when finalising their design solution.

8.6.6.4 Concept Transference

As a result of a more comprehensive approach to their design process, graphic design students were better at resolving the brief and transferring their concepts across media, and had fewer problems with the integration of media. They also had less difficulty in the creation of a unified visual look across media.

8.6.6.5 Analog and Digital Methods

There was a marked difference in the way multimedia and graphic design students approached their design development. Multimedia students were more reliant on digital tools to create design elements and were often reluctant to experiment with analog methods such as illustration or photography. Traditional visualization skills like drawing and sketching were ignored in favour of digital tools. This approach immediately constrains creative possibilities to the limits of the tool and forces the actualization of a design before the concept is fully developed.

In comparison, the graphic design students were much more inclined to work on paper-based material during their concept development. Students often generated their own illustrations, typefaces and imagery for their project. Digital actualization only began after a period of experimentation and development with analog methods.

8.6.6.6 Impression of Typography and Relevance Towards Discipline

Unsurprisingly, graphic design students rated the subject of typography as a more essential skill to their development of discipline knowledge than their multimedia counterparts. To a multimedia student, typography is perceived to be a secondary rather than primary skill. This result was expected due to the differences in communication, media and tools between the two disciplines. In two-dimensional print design, typography and imagery are the primary sources of communication. In comparison, four-dimensional screen design employs a wider range of design elements, with sound, animation and video being introduced.

Despite a difference in opinions regarding the relevance of typography towards their discipline knowledge, half of all students value typography as an expressive design element. This suggests that students value the expressive potential of typography but, as demonstrated by their final projects, were unable to utilize it successfully due to their lack of typographic knowledge and skill.

Often this resulted in students relying on imagery to communicate the expressive quality of their piece, as evident from the graphic design projects where most of the final solutions were image rather than typographic-based.

8.7 Summary and Conclusions

This chapter has presented and described the results of the action research projects. Three action research projects were conducted over a period of fifteen months with three different groups of second year students; two from the multimedia design programme, and one from the graphic design programme. These projects were designed to use the cross-media typographic framework as an approach to introduce and encourage a broader understanding of typographic knowledge relevant to screen-based media.

This research phase has been limited in terms of the student selection and delivery environment. To improve it, would require much bigger timescales, resources and permissions from other programmes, which proved impossible to achieve within the limits of the PhD. Although reliability from this phase of research is inconclusive because of these limiting factors, some general observations can be drawn from the experience. The introduction of theories, principles and concepts using the framework has been a contributing factor to an increase in the students' level of typographic knowledge. The focus on cross-media skills and the identification of relevant specialist skills has enabled students to gain a better understanding of the relationship between typography and new media. This was evident from the students' comments and their initial design ideas, although the final executions were often hampered by a lack of technical expertise. Additionally, tutors from both programmes recognized the value of the framework and have expressed their interest in running similar projects with their next group of students.

Observations from this stage have enabled the study to understand how students and educators engaged with the typographic framework. It resulted in the identification of expertise levels for each typographic aspect, and highlighted the differences between planned knowledge delivery and actual knowledge acquisition. This conclusion has raised doubts about the current sequence of global skills in the framework, and questioned its appropriateness. Additionally, the study was able to identify contextual factors that would influence the application of the framework. For example, students with different levels of ability and learning styles will engage differently with the framework. Differences in teaching styles were not observed in this study, but could well have an impact on the long-term delivery of the framework. This is worthy of further research beyond the PhD study.

On reflection, although the two groups of multimedia and graphic design students had differing backgrounds, project circumstances and project briefs[7], these differences did not affect the level of

[7] The implications of these differences were weighed carefully by the supervision team prior to the start of the project. It was concluded that the differences would not affect the study, as it was not the study's primary objective to conduct a comparative study of the two groups.

comparison between the two groups. The objective of this project was not to identify differences between multimedia and graphic design students, but instead to understand how different groups of students (with different levels of skill, learning backgrounds and educational traditions) engage with the framework. Understanding the requirements of different sets of students has provided the study with an opportunity to apply the framework in different settings and, as a result, demonstrated the flexibility of the framework.

The findings of this research stage were primarily used to evaluate and refine the cross-media framework, although conclusions drawn are limited to a single educational environment. The following chapter will discuss how the framework was peer-reviewed with educators and practitioners in order to test its applicability and relevance to the original research questions. It presents a better evaluation of the framework due to the reviewers' level of expertise and has resulted in more conclusive findings.

CHAPTER 9: REVIEWING THE FRAMEWORK

Results from the Peer Reviews and Subsequent Refinements to the Framework

9.1 Introduction

The framework has so far been discussed and reviewed by a limited number of people, namely the supervisory team and the School of Design educators. A review process by prominent educators and professional practitioners was deemed an appropriate and effective method of validation for the framework. This process was intended to reveal any major weaknesses that have not been identified by the study or the supervisory team. It tested the findings derived from this study's research data and revealed any potential flaw in its interpretation. Crucially, this was an important assessment of the framework's perceived significance within the field and its practitioners.

9.2 Purpose of the Peer Reviews

Three focus group sessions and two interviews were conducted to enable discussions on the approach, structure, content and application of the framework. Reviewers were asked to evaluate the framework based on its stated aims, and how successful it was in addressing the original research questions. Specifically, reviewers were asked to discuss four key themes of the framework:

1. **Approach, structure and content**
    a. Approach – six key attributes of the framework
    b. Structure – global and specialist typographic skills
    c. Content – categorization of typographic knowledge based on communication objectives
2. **Improvements to the framework**
3. **Learning sequence and teaching strategies**
4. **Possible application for educators and practitioners**

Findings from this stage enabled the study to evaluate how successful the framework has been in answering the initial research questions and how it might then be improved. Additionally, it was used to form recommendations for further research, particularly in the area of professional practice application.

9.3 Methodology

9.3.1 Focus Groups and Interviews

This review was designed as focus group sessions. Group reviews conducted in a focus group format enabled the selected expert reviewers to discuss and critique the framework in a focused yet relaxed atmosphere (Krueger and Casey, 2000). One-to-one reviews were considered to be too costly and time-consuming. In addition, the ideas and concepts put across were complex and dense, requiring in-depth discussion and reflection time for a reviewer to respond effectively. However, there were two occasions where face-to-face interviews were conducted in place of the focus group due to the unavailability of the reviewers. It was felt that these two exceptions were warranted due to the expert knowledge and experience that these individuals have in the subject of typographic education. Where possible, the study followed the same questioning protocol and analysis of the interview data, although one of the interviews was limited by time constraints and, as a result, was focused only on the key questions (refer to Table 9.3). The transcripts of the two interviews are located in Appendices 9.7 and 9.8. Data from the interviews were treated as part of the data set collected from the focus group sessions.

9.3.2 Sampling Criteria

The reviewers were composed of design educators and design practitioners from the United Kingdom. Similar questions were posed to both groups, however, differences transpired with questions relating to the application of the framework. Each group was asked to discuss possible scenarios of use within the context of their practice. Although the framework was designed for an educational audience, the inclusion of design practitioners was essential to fulfil one of the main objectives of the study, which is to inform future research regarding the development of a framework to support design practice. This required validation of the framework not only by design educators, but also by design practitioners.

9.3.2.1 Educators

Suitable educators were selected using these criteria:

1. Subject specialist – graphic design, multimedia design, typography
2. Profession – main activity is categorized as educator
3. Geography – Southeast England, due to the high concentration of design institutions within the London area
4. Experience – at least five years experience in the education sector

9.3.2.2 Practitioners

Similarly, suitable professional practitioners were selected using these criteria:

1. Subject specialist – graphic design, multimedia design, typography
2. Profession – main activity is categorized as a practitioner
3. Geography – Newcastle and London (and surrounding areas)
4. Experience – at least five years experience in professional practice
5. Professional activities – derived from three areas:
    a. Graphic design (print and literature – annual report, brochure and posters)
    b. Branding and packaging (corporate identity, marketing, packaging, direct mail and integrated solutions)
    c. Digital media (web, interactive and interface design)

Invited reviewers were either personally known to me through professional contact (although close and personal acquaintances were avoided to ensure objectivity) or had been recommended by my supervisors or peers. The list of recommended reviewers were then filtered through the sampling criteria before being contacted via email and telephone.

9.3.3 Group Design

A traditional focus group method is to conduct a single-category design, where the reviewers are treated as a homogenous audience. However, in this case, it was more suitable to conduct a 'multiple-category design' (Krueger and Casey, 2000) to allow comparisons to be made. This has the advantage of providing data that is much more focused to the needs and issues of each group – specifically, how each group views the relevancy of the framework towards their own profession. As a result the focus groups were divided into two categories: education, and professional practitioners. Two sessions were held with design practitioners while the remaining sessions were made up of design educators. Due to the high concentration of design institutes and design companies located in London, two of the three reviews were organized in a central London location. Design educators attended one session while design practitioners attended the other session. The remaining practitioner session was held in Newcastle upon Tyne. Table 9.1 summarizes the group design of this research phase.

Number of groups	London	Newcastle
Audience 1 (Practitioners)	1	1
Audience 2 (Educators)	1	

Table 9.1. Group Design Summary

9.3.4 Group Size

Most literature on focus groups recommend that the optimum number of reviewers range between 6-12 persons. According to Stewart and Shamdasani (1990), groups with fewer than six participants will find it difficult to sustain a discussion while groups with more than twelve will be too many for the moderator to control. In comparison with a larger group, a small group is less likely to generate rich and varied data (Morgan, 1997). However, smaller groups may be more suitable when reviewers are likely to be interested in the topic and where the study requires in-depth investigation into an individual's viewpoint. This study required a group larger than six reviewers due to the varied design skills and interests of the reviewers. However, it did not exceed ten reviewers to allow enough time for each reviewer to express his/her opinion in a more in-depth manner.

In addition to the three focus groups, two separate interviews were conducted. Interviews were used for three reviewers due to their unavailability for the focus groups. It was concluded that these individuals' viewpoints (considered to be subject experts) were important enough to warrant their inclusion through other methods. Due to the differences in data collection, the study was careful to ensure that the sequence of the review and the list of questions closely mirrored the focus group review. The major difference between the interviews and the focus groups were the omission of the opening question (refer to Appendix 9.2 and 9.3) in the interviews, which was aimed at helping reviewers become more comfortable expressing their views in front of a group of strangers. The final number of reviewers involved in this peer review is summarized in Table 9.2. Detailed descriptions of the reviewers are listed in Section 9.4.1 and 9.4.2.

Focus Groups	**Number of reviewers**
Group 1 (London-based educators)	6
Group 2 (London-based practitioners)	9
Group 3 (Newcastle-based practitioners)	6
Interviews	**Number of interviewees**
Interview 1	1
Interview 2	2

Table 9.2. Number of Reviewers

9.3.5 Question Design

9.3.5.1 Types and Number of Questions

Krueger and Casey (2000, p.44-45) identify five distinct categories of questions in a focus group session:

1. Opening questions
2. Introductory questions
3. Transition questions
4. Key questions
5. Ending questions

Opening questions are designed to be easy and aim to help reviewers become comfortable talking in front of a group of strangers. Introductory questions should introduce the topic of discussion to the reviewers, in this case the subject of typography, and get them to think about the issues surrounding the subject. Transition questions provide the link between general discussions of the subject and a more focused discussion on specific issues. Key questions are the main drivers of the study. Discussions surrounding key questions will form a large part of the analysis and will require most attention. The last set of questions is designed to bring closure to the session, and to enable reviewers to reflect on previous comments. It provides reviewers with opportunities to clarify or add additional comments to the discussion. It also allows the moderator to summarize the key themes discussed, and to validate his/her interpretation with the rest of the reviewers. The flow of these five categories is based on a logical sequence from general to specific questions. Both Stewart and Shamdasani (1990) and Morgan (1997) agree that getting participants to answer questions that are easy to respond to at the start of the session will help them relax and set the context for more in-depth discussions. It also deters 'group-thinking' as each participant will have the opportunity to declare their opinion before a group consensus emerges (Morgan, 1997, p.50). According to Stewart and Shamdasani (1990, p.61) questions should be formulated according to two principles:

1. Questions should be ordered from more general to specific subject matter
2. Questions should be ordered by their relative importance to the research agenda

Generally, the number of questions should range between 10-12 questions (Krueger and Casey, 2000) and be grouped under 4-5 distinct themes (Morgan, 1997).

9.3.5.2 Pre-testing

Pilot reviews were conducted to assess the clarity and flow of the questions. Both Kruger and Casey (2000) and Stewart and Shamdasani (1990) acknowledge how important pre-testing is. The

pilot reviews were conducted with two sets of test audiences. One review consisted of design practitioners and design graduate students, while the second review consisted of design educators. The design practitioners were based at the Centre for Design Research, Northumbria University while the design educators were tutors in the Multimedia Design programme at Northumbria University. Graphic Design tutors were invited but were unable to attend.

The reviews were divided into two parts. I started the review by asking some opening and introductory questions. This part of the review lasted around 30 - 45 minutes. The reviews were then paused, allowing me to give a 15-minute presentation[1] explaining my research questions and describing how my cross-media typographic framework had been developed in order to address them. Subsequent questions were directly related to the approach, structure and content of the framework set out in the presentation.

As expected, the pilot sessions revealed problems pertaining to the length, type and sequence of the questions. Modifications made to address these problems were:

1. Length – the number of questions were reduced from the original fourteen to nine final questions for educators, and ten final questions for practitioners.
2. Kinds of questions – the original opening question was not considered to be an easy icebreaker. It asked reviewers to write down five key words they associate with the subject of typography. Reviewers seemed to struggle with this task; as a result, the introductory question was changed to one that required reviewers to complete eight statements in a round-robin method, where each reviewer took turns filling in statements located on separate pages. This promoted interaction amongst the reviewers and was also easier to complete.
3. Visual examples of the framework - reviewers requested to see visual examples expressing the framework's content. As a result, I included an additional slide in my presentation to illustrate visual examples contained in each of the knowledge categories.
4. Sequences of questions – some of the key questions were rearranged to provide a natural progression between different themes.

Both groups were asked similar questions and only differed in one area; the application of the framework. Design practitioners were asked to consider possible applications within professional practice. In comparison, design educators were asked to consider possible applications of the framework within an educational environment.

[1] The printed version of the presentation is located Appendix 9.1

9.3.5.3 Questions Guide

There were six discussion topics. These were arranged according to the types of questions and are listed in Table 9.3. The complete question guides for the educators and professional practitioner sessions are listed in Appendices 9.2 and 9.3.

Activity	Question Category	Discussion Topic
Discussion	*Opening Questions*	Experience working across media
	Introductory Questions	Current models of type education and practice
	Transition Questions	Current focus and concerns of typographic issues in education
Presentation: Framework explanation	*To describe in more detail the two key components of the framework, typographic aspects and the three new media principles.*	
Discussion	*Key Questions*	Cross-media framework review
		Relevance of typographic framework for education and practice
		Typographic aspects
	Ending Questions	Summary

Table 9.3. Summary of Discussion Topics

9.4 Peer Reviews

9.4.1 Educational Reviewers

The educational reviewers came from a variety of Art and Design institutions located in the southeast of England. Nineteen potential reviewers were invited via e-mail and telephone conversations. Table 9.4 lists the names, organizations and areas of expertise of the educational reviewers. The final list of attendees[2] was considered to be suitable representation of the breadth of knowledge required to obtain valid findings from an educational perspective. Although Teal Triggs, Catherine Dixon and Phil Baines were unable to attend the reviews, they were interviewed beforehand to acquire their comments regarding the framework. Catherine Dixon and Phil Baines were interviewed jointly.

Individual	Organization	Designation	Expertise
Phil Baines	Central Saint Martins College of Art and Design (University of the Arts, London)	Joint leader in typography, BA (Hons) Graphic Design programme	Typography, letterpress, editorial design
Gulizar Cepoglu	London College of Communication (University of the Arts, London)	Lecturer in Information Design, BA (Hons) Graphic and Design programme	Information design, editorial design
Catherine Dixon	Central Saint Martins College of Art and Design (University of the Arts, London)	Joint leader in typography, BA (Hons) Graphic Design programme	Typography, typeface classification, editorial design
Finola Gaynor	Ravensbourne College of Design and Communication	Programme leader in the BA (Hons) Moving Image and Graphic Design programme	Graphic design, motion and interactive design
Andy Haslam	Central Saint Martins College of Art and Design (University of the Arts, London)	Programme leader in the MA Communication Design programme	Typography, graphic design, information design, editorial design
Stuart Henley	London College of Communication (University of the Arts, London)	Head of Typography pathway in the BA (Hons) Graphic and Design programme	Typography, editorial design
Gerry Leonidas	Reading University	Programme leader in the MA Typeface programme	Typeface design, web design, design writer
Kelvyn Smith	Northumbria University	Part-time lecturer in typography and letterpress in the BA (Hons) Graphic Design programme	Typography, letterpress, editorial design
Teal Triggs	London College of Communication (University of the Arts, London)	Head of Research, School of Graphic Design	Typography, design theory, design history

Table 9.4. Reviewer List in the Educators' Focus Group

[2] Participants have given their permission to be named.

9.4.2 Professional Practice Reviewers

Practice-based reviewers came from a variety of design consultancies located mainly in London and in Newcastle upon Tyne. A total of eighteen and thirteen potential reviewers were invited for the London and Newcastle sessions respectively. The practitioners who attended the sessions are listed in Tables 9.5 and 9.6.

Individual	Organization	Designation	Area of Expertise
Tim Beard	Bibliotheque Design	Creative Director and partner	Print literature, editorial design, corporate identity
Matt Berry	Soukias Jones Design	Senior Designer	Corporate identity, print literature, advertising, direct marketing
Damian Ferrar	Imagination Media Group	Design Director	Digital, web, interactive system design, moving graphics
Philip O'Dywer	Freelance (previously partner of State Design)	Designer	Interactive, web design, interface design
David Rainbird	Fibre Design	Design Director and partner	Digital media, print literature
Richard Smith	Jannuzzi Simth	Creative Director and partner	Digital, web design, interactive system design
Isable Sole	Alan Bates Design	Design Director and partner	Print literature, editorial design, corporate identity
Simon Yuen	GR/DD	Director and partner	Interactive, web design, interface design
Marianna Zegiannini	Alan Bates Design	Design Director and partner	Print literature, editorial design, corporate identity

Table 9.5. Reviewer List of the London-based Practitioners' Focus Group

Individual	Organization	Designation	Area of Expertise
Julia Dobson	Julia Dobson Design	Partner	Print literature, editorial design, corporate identity
Craig Hutton	NE6 Nevis Design	Design Director	Corporate identity, print literature, editorial design
Will Jackson	Presence Multimedia	Director	Web design, web development, interactive design
Andy Reay	Gardiner-Richardson	Senior Designer	Corporate identity, print literature, editorial design
Jim Richardson	Sumo Design	Managing Director	Corporate identity, print literature, new media design, typography, typeface design
Alan Whitfield	NE6 Nevis Design	Creative Director	Corporate identity, print literature, editorial design

Table 9.6. Reviewer List of the Newcastle-based Practitioners' Focus Group

The mix of print and screen-based designers for the London session was considered to be a suitable representation of the current professional practice. However, a majority of the Newcastle reviewers were print designers. There were two probable reasons for this; firstly, a high proportion of the design consultancies located in the northeast of England are print-based. Secondly, other potential reviewers from new media design were unable to attend the session. This bias towards print-based practice was noted and considered during the analysis of the Newcastle session.

9.4.3 Focus Group Events

Three focus group events were held, two in central London locations and one in Newcastle upon Tyne. The dates and location of these events are listed in Table 9.7.

Group	Location	Date
Educators	Central Saint Martins School of Art and Design, Southampton Row.	7th June 2005
Practitioners – London	The Women's Library, London Metropolitan University	8th June 2005
Practitioners – Newcastle upon Tyne	Centre for Design Research, Northumbria University	14th June 2005

Table 9.7. Focus Groups' Locations and Dates

These sessions lasted on average between 2-2.5 hours. They were divided into two parts; the first part of the session was used to initiate discussions surrounding typographic education and practice. It enabled the study to obtain the reviewers' personal views, experiences and standpoints. The second part of the session began with a fifteen-minute presentation to introduce the study's research objectives, findings and the typographic framework. Reviewers were then posed a series of questions relating to the approach, structure and content of the framework. Discussions obtained from this second part were used to generate the main findings for this stage of the research.

I was the sole moderator of the London-based groups. In the Newcastle session, an assistant moderator was present to help with the focus group organization and to take additional field notes. The quality of the data collected in sole moderator groups was not compromised as I relied on audio recordings to transcribe the conversations. Field notes were only used to refer back to a real-time interpretation of a discussion that may not be evident by reading the transcript.

9.4.4 Data Collection

A digital video and audio recorder were used to document the sessions. The interviews with Teal Triggs, Catherine Dixon and Phil Baines were audio recorded. Unabridged transcripts of the focus groups and the interviews were created by listening to the audio recordings. Complete transcript-based analysis was chosen in favour of abridged transcripts, notes or memory-based analysis (Krueger and Casey, 2000) because it provided the most complete documentation of the discussions and did not need to rely on the moderator's field notes. Complete transcripts of the sessions and interviews are located in Appendices 9.4 to 9.8. Video recordings were used as a

contingency or if there was a need to clarify who was speaking, and in conversation with whom. Minor grammatical edits were made to improve the flow of conversations. The transcriptions were later sent to reviewers of each group for verification and to provide reviewers with an opportunity to append supplementary comments.

9.4.5 Data Analysis

The analysis and interpretation of focus group data is no different to any other types of data, in that the research objectives and questions determine the depth and focus of analysis (Krueger, 1998; Morgan, 1997; Stewart and Shamdasani, 1990). The research objective of this stage is to provide validation to the cross-media typographic framework, and to collect comments on ways to improve it. Consequently, the analysis was focused on the reviewers' criticism of the approach advocated by the framework, the way it had been structured and categorized, and its content. Understanding the context of the criticism will help the study determine where the limitations of the framework lie, whether in its description, visualization, emphasis, content or even its epistemological foundation.

Data analysis for focus groups poses different challenges to qualitative analysis. According to Krueger (1998), the complexity of focus group analysis occurs at several levels. Reviewers' answers to the same question may consist of different words, but have similar meaning. The analyst must consider how to compare different answers; for example 'were they talking about the same things', 'what was the context of the comments' and 'what was the intensity of the response by the reviewers'. The analysis of the content must take into account several considerations. Krueger (1998, p.31) asks that we consider:

1. The words
2. The context
3. The internal consistency
4. The frequency of the comments (how often was it said?)
5. The extensiveness of the comments (how many people said it?)
6. The intensity of the comments (how strong was the opinion?)
7. The specificity of responses
8. What was not said

The first step in analysing large amounts of qualitative text is to first identify sections of the transcript relating to specific questions (Miles and Huberman, 1994; Stewart and Shamdasani, 1990; Morgan, 1997). Coding according to Miles and Huberman is analysis. It is to 'review a set of field notes, transcribed or synthesized, and to dissect them meaningfully while keeping the

relations between parts intact...'(1994, p.56). They describe a fairly standard set of analytic sequence when analysing qualitative data, starting with the coding of data (1994, p.9):

1. Affixing codes to field notes or transcriptions.
2. Noting reflections or remarks in the margin.
3. Sorting and sifting through these materials to identify similar phrases, relationships between variables, patterns and differences and similarities between sub-groups.
4. Isolating patterns and processes, commonalities and similarities.
5. Deriving a set of generalizations from the patterns.
6. Confronting those generalizations with a formalized body of knowledge in the form of constructs or theories.

In this study, descriptive coding was initially generated from the research questions and themes. They were used to code the data with the QSR N6 NUD*IST (Non-Numerical Unstructured Data Indexing, Searching and Theory-Building) software, which is designed to aid analysis employing the coding methodology. These codes evolved as the analysis of the data was conducted. The final list of descriptive codes and their definitions are listed in Table 9.8.

1. Framework Approach	
Code Name	*Definition*
Integrated model of media convergence	The framework advocates a two-pronged approach: an integration of global design skills and concepts that are medium independent, and a separation of specialist media skills. Discussions on the strength and weaknesses of this approach and how it can be achieved.
Integrated model - challenges	The challenges or difficulties in trying to apply this approach to current education and design practices.
2a. Framework Structure and Content: Global Principles - Typographic Aspects	
Code Name	Definition
Typographic Aspects	The categorization was created using a model based on the communicative role and value of typography. Discussions surrounding its categorization rationale, description, content, sequencing and terminology.
Sequence	Discussion specifically of the proposed sequencing of global skills– if it mirrors actual student learning or teaching strategies.
Description	Discussion of the terminology used to describe the categories and the definition used to explain the content of each category.
Content & Categorization	Discussion of the rationale, appropriateness and usefulness of the categorization.

Table 9.8. Descriptive Code Definitions

2b. Framework Structure and Content: Global Principles - Knowledge Categories	
Code Name	Definition
Knowledge Categories	There are three types of knowledge categories residing in the area of global principles. Discussions surrounding their rationale of categorization, description, content, sequencing and terminology.
2c. Framework Structure and Content: Local Principles	
Code Name	*Definition*
Local Principles	Local principles are divided into two main areas: specialist areas of print and screen. Discussion surrounding their content, division, categorization, terminology and description.
New Media Attributes	Three new media attributes (hypertext, interactivity and temporality) were identified as key specialist skills for screen media. Discussion surrounding the rationale of their selection and the exclusion of any relevant skills in screen-based media.
Specialist Skills	Discussion surrounding the need for, and identification of, specialist skills requirements in a cross-media environment. Listing of what these skills are and which subject area they will come from.
2d. Framework Structure and Content: Visual Representation	
Code Name	*Definition*
Visual Representation	Discussion surrounding the visual and abstract representation of the framework. Visual representation includes the hexagonal diagram (refer to Figure 9.1 – which illustrates the relationship of global and local principles); and the typographic aspect and knowledge category matrix table.
3a. Framework Application: Education	
Code Name	*Definition*
Education tool	Discussion regarding the possible uses of the framework in an educational environment. It also includes discussion of applications based on future development of the framework.
Challenges in education application	Discussion surrounding the challenges or difficulties in the application of any tools derived from the framework. Issues and context of application within an educational environment are included.

Table 9.8. Descriptive Code Definitions (continued)

3b. Framework Application: Practice	
Code Name	*Definition*
Practice-based tool	Discussion regarding the possible uses of the framework in a practice-based environment, in its current form. It also includes discussion of applications based on future development of the framework.
Challenges in practice-based application	Discussion surrounding the challenges or difficulties in the application of any tool derived from the framework. Issues and context of application within a practice-based environment are included.
4. Framework Context	
Code Name	*Definition*
Framework context	Discussions surrounding issues that will affect how the framework will be accepted, integrated and applied in both education and practice-based environments.
Teaching processes and strategies	Discussion regarding the differences and similarities of teaching strategies across educators and institutions.
Learning experiences	Discussion surrounding the different styles of learning experience, determined by students' past experiences, individual styles of learning, tutor influences and curriculum design.
Relationship with other design skills and elements	Discussion surrounding the context in which the framework will operate within the design process.
Student profile	Students' profiles are becoming more heterogeneous. Discussion surrounding how the students' pre-university knowledge has changed and how that will affect the application of the framework.
Skill and experience level	The framework has not distinguished between different skill levels. Discussion surrounding whether there is a need for distinction and, if so, how this can be achieved.
Future developments	Discussion surrounding future research and developments of the framework.
5. Framework Audience	
Code Name	*Definition*
Framework audience	Discussion surrounding the identification of different user groups for the framework. It also includes discussion regarding the suitability of the current framework for its targeted user groups.

Table 9.8. Descriptive Code Definitions (continued)

These descriptive codes were continually refined to develop more interpretive and pattern codes (Miles and Huberman, 1994). Interpretive codes recognize several layers of interpretation within a descriptive code, whereas pattern codes are even more inferential and explanatory, identifying an emergent theme, configuration or explanation. The creation of data displays was the next analysis step. Data display in the form of matrix tables are useful to provide an overview of the data that is arranged systematically, and can be accessed simultaneously. This format allows 'careful comparisons, detection of differences, noting of patterns and themes, seeing trends...' (Miles and Huberman, 1994, p.92). The findings emerging from the exploration of data through data displays are described in the next section.

9.5 Findings

9.5.1 Integrated Model of Media Convergence

Reviewers discussed at length the need for a more forward-looking model, which depicts an integrated and convergent media framework. There was general consensus that the convergence of print and screen media will involve an integration of skills, rather than a continued separation as depicted in the current framework. It was suggested that the cross-media framework (presented during the review, see Appendix 9.1) reflects the current hybridization of media rather than convergence. The reviewers were concerned about the potential obsolesces built into the framework by continuing to separate skills based on media knowledge. Among their comments were:

> 'By separating screen media and print media, you have created two camps already. Well that doesn't seem to be a very good model for the future. That seems like a model representing the analysis of the present.'

> 'You've built in an obsolescence – what your PhD will become unless you rethink your model as good evidence for future researchers, of how people thought they could make some sense of new media at this point in time.'

In addition, there seemed to be a mismatch in the description of the new framework (refer to Table 9.9) with the visual representation of the framework (refer to Figure 9.1). The visualization seemed to suggest that there would be a continued separation of media rather than an integrated model, as one reviewer pointed out:

> 'Are you suggesting teaching specifically for the screen medium? Aren't you then focusing on one single technology again? One of the points on your comparison tables is the idea of cross-media. Are you reverting from saying that this is a new framework, but we are still having separate media models?'

Revised Post-Digital Typographic Framework
Integrated model of knowledge
Cross-media skills
Cross-disciplinary influences
Communication focused
Principles developed to ensure flexibility and appropriateness
Principles developed for a changeable media

Table 9.9. Analysis of the Current Framework Attributes

Figure 9.1. Cross-media Typographic Framework Model

9.5.2 Flexible Model of Learning

9.5.2.1 Sequence of Learning

Western typographic education has been derived from a variety of influences. Reviewing current typographic curricula in British and American[3] design schools has revealed that the influence of modernist traditions and principles is still strong. Form and functionality principles are continually emphasized as the basic foundations of typography. Echoing this tradition, there is an implied sequence to the Typographic Aspects categories (refer to Figure 9.2). Students are initially introduced to the details of typographic form, before progressing to learn about arranging typographic content. This is followed by discovering how meaning is expressed through typographic form and content before concluding with the exploration of the relationships between readers' interpretations, communication brief and other design elements of a project. Students build up a series of basic skills as they progress along this knowledge continuum. Although this may seem to be a logical learning sequence, discussions with the educational reviewers revealed that they did not necessarily think it reflected the reality of learning.

[3] According to Schmidt (2004), type education in the United States is based on an amalgam of influences, ranging from traditionalism, to the Bauhaus and Die Neue Typographie, to the International Typographic Style to the New York School and American eclecticism to Dan Friedman's codification of Wolfgang Weingart's New Typography.

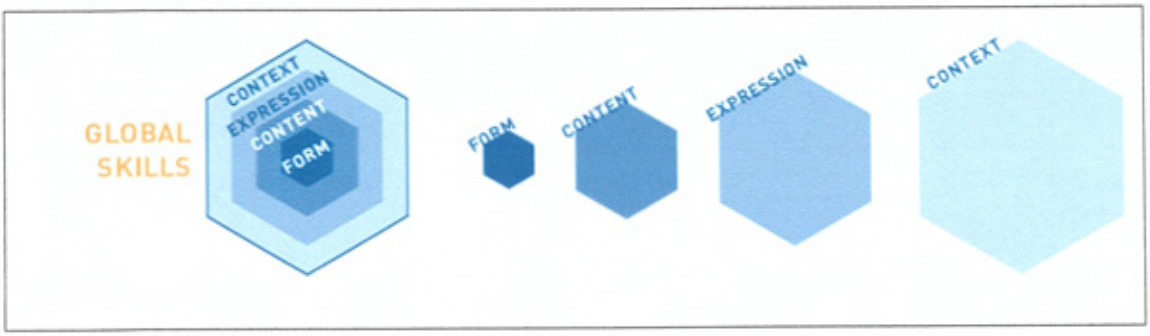

Figure 9.2. Sequence of Global Skills

Educators in the review agreed that a student's sequence of learning is organic and accumulative. It is difficult to separate the stages of learning, and hence teaching. Reviewers questioned whether it is possible to suggest a sequence and, if so, is it in the right order as the framework suggested? As Norman and Rumelhart note (1978, p.50):

> Learning takes place whenever learners modify their knowledge base – and no single theoretical description will account for the multitude of ways by which learning might occur.

There was general agreement to this statement as demonstrated by the views of these reviewers:

> 'This (referring to the tabular matrix) suggests a sequence and presents a hierarchy of doing things, which is very much not the case.'

> 'The assumption of formalized education, is that you will pass in the order of learning, exactly how it was taught to the learner. I absorb things that people taught me passionately, in what they believe in.'

> 'You have actually introduced the idea of order. However, I think you can start from anywhere! I don't think you don't need to teach it from the basics. You can go in any direction. If you teach with passion, they will pick it up anyway…Sometimes we want to organize the material because it reinforces the prejudice we already have. So we impose our views on students rather than allow them to discover it for themselves.'

Both educators and practitioners supported a more flexible and non-prescribed route of learning, and believed it was unrealistic to present a fixed sequence of teaching. Discussions with the educators in particular have revealed that they rarely teach in a segmented manner:

'We wouldn't necessarily divide things up like this, but different aspects of this (referring to the Typographic Aspects) would be introduced at different points.'

Suggestions from some practitioners were that if a sequence was to be implied, the order should follow a practice-based order, which generally begins with an exploration of the design context before the application of form and content. At the beginning of a design process, design experts have been observed to move rapidly to early solution conjectures, and use these conjectures as a way of exploring and defining problem-and-solution together (Cross, 2004). Understanding the design context (for example, project objectives and constraints) will lead to more accurate solution conjectures. It seems that this emphasis on context has been established as a viable alternate teaching method, as one educator revealed:

'It's interesting because from my perspective, context is still important. In recent years I have become more involved in the theoretical and linguistic aspects of language. This is reflected in the way that I teach which is to get students to think of the bigger picture initially.'

And in doing so, reflect a closer connection to models of professional practice, as acknowledged by practitioners:

'In your framework, the sequence starting from typographic context to form reflects the way we act as practitioners, which is to work from a general context to a specific area.'

'Didn't you feel that when you were studying, it was very form focused and then when you started working, it became very much context focused, for example the relationship with clients. There is a gap between education and practice. At school they generally teach a lot of form but they don't tell you a lot about client relationships.'

9.5.2.2 Level of Subject Engagement

Questions were raised regarding the applicability of the framework for different skill levels. Responding to the reviewers' questions, I explained that the framework was not designed to be a 'one size fits all' solution. Having accepted that the framework cannot fulfil requirements of all levels, some reviewers suggested that the framework could be developed into various versions depicting the different levels of student engagement with different areas of the framework. Cross-referencing skill levels with subject engagement could also help educators cope with the changing profile of undergraduate students in the United Kingdom.

'I think student profiling is going to be key to making the most effective use of this framework. You've got to understand where your students are coming from because increasingly we are getting mature students, coming back to education, having for whatever reason not completed their first degree. This is part of the widening participation initiative. And with that, come not only experience, but also baggage.'

'Students come with a really mixed bag of experiences...So my main task when moderating the first year curriculum is to unpick what they have learnt before and then to start off by getting them to enjoy letterforms.'

Findings in the action research projects have confirmed that the manner in which students engage with the framework is dependent on their previous knowledge base. Most of the second-year students produced work that used typography within the *content* and *expression* aspects. Typographic application in the *context* aspect was rare, as it requires students to have developed an understanding of the medium, users and design elements. In addition, graphic design students struggled much more with interactive concepts and applications due to their lack of experience and technical proficiency in this area. As a result, they have had to spend more time and effort (in comparison with their multimedia counterparts) understanding the concepts introduced in the specialist area in order to compensate for their inexperience.

9.5.3 Context of Use

9.5.3.1 Teaching Strategies and Styles

Reviewers were interested to enquire about how the study envisaged the circumstances and environment where the framework would exist. The usefulness of any tool, model or framework is linked to how well it has considered the factors that will affect its use. Two main discussion threads emerged: one focusing on the education environment, and the other on the professional practice environment. A particularly significant theme discussed in the education thread was the issue of teaching strategies and styles. Unsurprisingly, the educators acknowledged that their own individual teaching style and strategy are highly individualized and are reliant on their personal experience, interests and personality. How and what they teach reflects their personalities and approach to design (Mockford, 1996; Durling et al., 1996).

This apparent lack of standardized teaching strategies is partly due to differences between visually-based disciplines like design, and more traditional disciplines such as the humanities or sciences. Its apprenticeship-learning model, often referred to as the Master and Apprentice method, is unique amongst modern-day education. National teaching and learning support

programmes such as UK's Postgraduate Certificate in Academic Practice (PCAP)[4] are often unsuitable for this model of teaching and learning. As a result, design educators rarely follow a standardized teaching model, often leading to a variety of delivery styles as described by the educators during the review, for example:

> 'Its not just about the subject of typography, it is about the teaching of it. Where's the research into teaching and typography? In the profession of design, very little is known about teaching design... Teaching is different from practising graphic design.'

> 'You teach from where you are, not from the structure that you have made, that's what we do.'

As more emphasis is placed on regulating design programmes in the UK, for example through the Quality Assurance Agency (QAA) audit exercise, educators are finding it difficult to match learning outcomes with teaching objectives. Often this is due to the organic nature of design learning and, as a result, the learning outcomes are difficult to quantify, as expressed by one reviewer:

> 'It's a massive problem, now. I've encountered this problem where I wanted to organize a field trip during the course, as part of my MA program. The university said that the field trips must have independently assessable learning outcomes. I think its nonsense, because it supports contextual studies and aims to inform their practice.'

Educators admitted it is often difficult to translate their implicit knowledge and experiences of teaching into explicit formal knowledge. Translating successful teaching strategies into explicit knowledge is difficult as it involves describing the environment where learning takes place. Although educators recognized that the framework attempts to map this formal knowledge, they questioned its applicability in realistic teaching practices considering the challenges of differing teaching and learning styles. In order to understand the implication of different teaching styles and strategies, further field-testing is required for the framework. Therefore, the future development of the framework should be closely linked to teaching strategies.

[4] PCAP is a one-year part-time, work-based M-Level programme, designed to enable new academic staff with teaching responsibilities to reach a nationally recognized standard of competence in teaching and learning support. It is generally a requirement of most UK universities for any new academic staff to undergo this training.

9.5.3.2 Design Knowledge

The development of any practice-based tool has to take into account its context of use. In a design practice, typography is only one aspect of a number of different design elements used by a designer. Reviewers enquired about the practicalities of the framework during a live project where designers have to consider different aspects, such as the design brief, client, budget, deadlines and the different skill base of the design team. Reviewers also questioned how the framework's approach would help a designer consider the application of typography with other design elements such as imagery, sound, colour, animation etc, for example:

> 'In your framework, you are talking very specifically about typography, where elsewhere in everyday design jobs; typography is only a small component of what we do. So applying your framework would be quite tricky in what we do, because there is so much more to what we do in our design work such as websites and CD-ROMs.'

Based on the issues raised in the focus groups, the study would have to address the context of use more explicitly and, if possible, explore scenarios of use.

9.5.4 Education Application

9.5.4.1 Areas of Application

Discussions surrounding the possible areas of application within an educational environment centred on four usages:

1. Teaching tool
2. Reference tool
3. Curriculum guide
4. Assessment tool

As a teaching tool, the diagram depicting the framework could be used to illustrate the relationship between global and specialist skills. It would help instil the idea of skills transferability in different contexts, and provide students with a relationship model between the different aspects of typographic usages. The Knowledge Matrix table (refer to Tables 7.4 and 7.5 in Chapter 7) is useful as a reference tool for both the educator and the student. For educators, it can be used as a subject reference during the planning and delivery of type classes while students may want to use it as a subject reference or an aide-mémoir when revising their subject. This can be particularly useful for distance-learning students, who may not have the advantage of constant tutor contact to reinforce those principles.

Reviewers interpret the knowledge matrix as a comparator model to describe a design curriculum. Its categorization of knowledge seemed to echo a student's journey from novice to competent designer. Reviewers discussed its potential use as a tool to enable discussion and planning of typography within a design curriculum. They also envisaged it as a powerful visualization tool for a programme structure, whether it is presenting the programme to potential students or fellow academics. In addition, educators can use the Knowledge Matrix as a framework to interrogate the effectiveness and appropriateness of a student's typographic application.

9.5.4.2 Challenges

During the discussions about the potential uses of the framework, reviewers also identified issues that will challenge its effectiveness. The main areas of discussions were:

1. Teaching strategies and learning styles
2. Changing student profile
3. Time and financial constraints

Discussions with educators have confirmed that the teaching environment is often unpredictable as teaching strategies and learning experiences are highly individualized in every case. Therefore this study concludes that without a reasonable amount of field-testing it is difficult to predict how well the framework will be accepted or applied by the education community. Unfortunately there has been a limited amount of field-testing conducted in this study due to time constraints. This is one of the study's limitations. It seems reasonable to assume that this framework is a 'work-in-progress' model that will be refined when there are more opportunities to test it in future post-doctoral research.

Reviewers were aware that due to widening participation and the current trend of direct entry from schools to university, the experiences students bring with them into university are very divergent and varied. The framework should be designed to cater to different levels of typographic skills and knowledge. Prior to that, it should provide a method for assessing students' skills in order to identify their capability and achievement. This is important, as some students will have built up their own impression of typography through various sources, and not all impressions are positive, as this reviewer described:

> 'I know there is one foundation with a really old-school typographer, who's got to be really old. I've never met him, just heard about him. He gets students to buy a slide rule. I've

never used a slide rule in my entire working life. He gets them to buy this thing, which just sits there on their desk for years to come. So some of them come in very hostile.'

Design by its nature requires designers to be knowledgeable in many different subjects. For example, editorial and writing skills are important for a typographer. The pressure to develop external subject skills should not affect the emphasis on key skills. The study has to be mindful of this environment, and provide educators with a framework that prioritizes key principles and skills relevant for future challenges. This point was illustrated by the discussion as to whether there was value in maintaining links with typography's historical associations:

'In a way, you can say that it doesn't really matter why a serif is a serif because none of those technological reasons matter anymore. We have developed better production methods. They are still talked about a lot at the beginning but maybe are becoming less important when compared to the other issues.'

'When you talk about form and the technology attached to it, I think while its useful to know, it's not essential to know about it. If you talk about technology, you can still talk about print and screen-based typography relating to technologies that are used because there are still some rules that apply to typography due to print history.'

At the same time, some reviewers defended the importance of maintaining those links:

'It's like at school, when you are learning modern history, if you don't know what the ancients were doing, it's very difficult to have any sort of foundation.'

9.5.4.3 Attributes

It was clear from the discussion amongst the educators that teaching environments are dependent on different factors such as: individual teaching and learning styles, student profiles and institutional approaches. Several reviewers stressed that it was important to develop and test the framework in a realistic teaching environment. Due to these varying factors, it was concluded that it is essential to create a flexible framework that can adapt to the changing needs of the education environment.

9.5.5 Professional Practice Application

9.5.5.1 Areas of Application

During the review, I stressed to the reviewers that the current framework was not designed for professional practice application. However, I suggested that, when they discussed the possible practice-based uses of the framework, they should assume that some form of adaptation would have to be made. I also encouraged them to consider what those adaptations might be. In summary, the discussions on practice-based application centred on five possible usages:

1. Educational tool
2. Reference tool
3. Analytic tool
4. Communication tool
5. Prescriptive model

Practitioners felt that the Knowledge Matrix was a useful tool to help them educate clients on matters regarding typographic methods and processes. Some even suggested that it could be modified to describe their design process. Practitioners recognized the value in having a framework that helps them describe the implicit design decisions made during a project. They also acknowledged its advantage as a reference tool that can be used during their research and exploration stage. Through the framework, practitioners are reminded of the richness of past design traditions and the various ideas that have been explored by other designers. The framework can be used as an analytic tool to reveal design decisions made during a project, or as a reflective practice tool to help designers understand and improve their design process. A reviewer referred to the Knowledge Matrix as a relational matrix, where it is a way of 'recognising yourself in the context of the other parts of the subject.'

Communication between client and designers are often fraught with misinterpretation, and suffer from a lack of similar vocabulary. Clients are often baffled by the designer's creative process and similarly designers struggle to describe their design solution in a manner understandable to clients. Having a framework that clearly describes and visualizes the relationship between design knowledge and design outcomes will help designers explain their design considerations and decisions. Externally, the framework has the potential to be a communication bridge between the designer and client. Internally, the framework can be used to develop a prescriptive model for larger design consultancies. Such consultancies, which often include corporate branding and communication groups, have large inter-disciplinary teams working in a collaborative manner. Having a prescriptive model to guide the design considerations and decision-making would streamline, co-ordinate and standardize the design process.

9.5.5.2 Challenges

There were many more challenges discussed for practice-based application than with educational application. This was not surprising, and was probably due to two reasons:

1. The framework was not originally developed for a practice-based audience.
2. Professional design practice is notoriously resistant to incorporating any theoretical models, guidelines or framework into their design process. Designers learn design through project-based practice rather than theoretical discourse, 'learning by doing', as Schön (1987, p.93) describes it, often beginning to design before knowing how to design. As a result, designers tend to view the incorporation of models derived from theory as creativity suppressors and often see no value to them in their day-to-day design activity. Design historian Tony Fry, identified this as a problem in his paper 'Design history: a debate':

> Theoretical work, concretely and historically grounded, is not only of value but urgently needed in the study of design. It also means an expenditure of effort in the development of new theory, to address a changing design object. Further, I would defend this project as a site of resistance in the face of the strong anti-theory tradition within the general anti-intellectualism of British art and design education (1981, p.15).

In addition, designers themselves often perceive design activity as chaotic and unmanageable. This view represents the classic stereotype image of a design process where the design parameters are constantly evolving and changing (Emmitt, 2002). In support, Lawson (1990) acknowledges that design problems cannot be comprehensively stated, leading to uncertainties about design objectives and their relative priorities.

In general the main challenges relating to practice-based application are:

1. Integration with other design considerations.
2. Designers' attitudes towards theory.

Similar to the teaching environment, professional design practice is determined by many internal and external factors. The use of the tools (for example the Knowledge Matrix in Chapter 7, Section 7.5.2) derived from the framework will be dependent on different circumstances, such as the kind and size of the client, the skills and knowledge of the design team, the type of project and its design brief. In addition, the attitudes and design processes of designers are highly individualized. Some designers are just not interested in engaging in the theoretical aspects of design, nor are they interested in analysing their own work through a prescribed route. Designers

tend to explore, understand and solve problems by experimenting with a variety of possible solutions, rather than taking time to reflect and theorise about them (Eastman, 1970).

9.5.4.3 Attributes

There was broad agreement amongst the reviewers that any tools or methods developed from the framework have to be succinct and simplified for it to be successful. They felt that practitioners are unlikely to want to use, or even refer to, a long and over-comprehensive list. Practitioners are often busy and rarely have time to reflect on past projects. They will want to see tangible and immediate value of any tool. In its current state, the framework contains several layers of complexity. This needs to be prised open and delivered in a staged manner. In addition to simplifying it, the framework has to be modified to the level of professional knowledge and skills. The level of detail developed for students might seem patronising to a professional practitioner. Designers do not need to re-learn basic principles, but rather be presented with an overview of global skills.

Reviewers uniformly agreed that practitioners are most likely to use the framework for strategic purposes (such as educating clients) rather than as a day-to-day design tool. The study should endeavour to develop tools that support the strategic thinking and development of a design practice. Designers tend to possess a romantic self-perception and see themselves as highly individual, intuitive and non-conformist people (Coyne and Snodgrass, 1991; Whatmore, 1996). Whilst this general stereotype does resonate with creative personalities, designers are more likely to take a pragmatic and rational approach in their design process and especially in collaborative teams (Fisher, 1997). Although any tool that is developed must not be overly prescriptive (as it can be perceived to be counter-intuitive), it should possess enough formal structure to allow designers to apply it in a systematic and functional manner.

9.5.6 Summary of Application Areas

Table 9.10 is a summary of the application areas, purposes and stages of use for three sets of audiences: educators, students and professional practitioners.

Application Areas	Educators		Students		Professional Practitioners	
	Purpose of Use	*Stage of Use*	*Purpose of Use*	*Stage of Use*	*Purpose of Use*	*Stage of Use*
Teaching / Education Tool	Showing or demonstrating how knowledge is categorized.	During class	Not Applicable	Not Applicable	Educating the client on the consultancy's typographic decisions.	Communication stage (fostering relationship)
Reference Guide	Reminding educators of the vocabulary, principles and examples during class delivery.	Class planning	Reminding students of the vocabulary, principles and examples of use.	Throughout the class and programme	Reminding practitioners of the richness of past traditions and ideas that have been explored by other designers.	Research and design exploration stage
Curriculum Guide	Enabling discussion and planning of typography within a design curriculum.	Curriculum and yearly planning	As a subject guide to understand the relationship between different areas of learning.	At the beginning of the programme and probably at the beginning of a new academic year.	Not Applicable	Not Applicable
	Communicating and contextualizing the programme structure and its relationship between subjects.	Open day, introduction to programme, introduction to class	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Analytic / Assessment Tool	Analysing the effectiveness and appropriateness of a student's usage of typography.	During project assessment	Not Applicable	Not Applicable	Increasing a designer's understanding of his/her design process through reflective practice.	In between projects or during training
	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Clarifying the design decisions taken during a project.	Evaluation stage

Table 9.10. Summary of Application Areas Across Different Audiences

Application Areas	Educators		Students		Professional Practitioners	
	Purpose of Use	*Stage of Use*	*Purpose of Use*	*Stage of Use*	*Purpose of Use*	*Stage of Use*
Communication Tool	Not Applicable	Not Applicable	Not Applicable	Not Applicable	As a system to communicate design processes and decisions to the client.	Communication, pitching, presentation and reporting stages
Prescriptive Model	Not Applicable	Not Applicable	Informing design considerations and guiding typographic decisions in a design project.	Research and design exploration stages	Informing design considerations and guiding design decisions that will streamline, co-ordinate and standardize the design process within a consultancy.	Planning of a project

Table 9.10. Summary of Application Areas Across Different Audiences (continued)

9.5.7 Specialist Skills

9.5.7.1 Screen Grammar

Reviewers were generally in agreement with the concept of skills division between global and specialist skills (refer to Chapter 7: Section 7.5 and 7.6 for a description of these skills). They recognized that the screen medium requires its own 'screen grammar'. Discussions centred on the perceived differences between print and screen, leading to suggestions regarding areas where the framework should focus. These discussions served to confirm the screen-based attributes emphasized by the framework, for example:

> 'One of the things that occurs to me is that one set of skills come from typography but interactivity poses another set of conceptual skills about navigation which can be difficult to comprehend such as hypertext. Beyond that, there is another set of skills which has been taught in film school which is what I would call the 'grammar of film', which most typographic students are unfamiliar with.'

9.5.7.2 Designing Specifications

Reviewers were asked to comment on the selection of the three screen-based media attributes highlighted by the framework: hyper-textual linking, interactivity and temporality. All reviewers supported the inclusion of these attributes. However, a few noticed that the framework failed to reference the issue of 'dynamic design', which they believe to be a key feature of the 'temporal' attribute. Dynamic design refers to design created to accommodate changing content over a period of time, such as blogging websites. Examples of the discussions surrounding this issue include:

> 'I think one thing I'll add to that list of screen attributes is the idea of dynamic designs. On the simplest level, websites and layouts have to respond to arbitrary amounts of content, creating an amazing range of multi-dimensional and responsive typographic designs.'

> 'There is another part of temporality that has nothing to do with animation, which is dynamic web pages, like blogging. Somebody, somewhere is designing templates for blogs. They have no idea what the content is going to be, because someone will come along and fill it with their opinions.'

Media convergence has also developed the need for content and brand experience to be repurposed across multiple media platforms. Designers increasingly have to switch their focus

from designing forms for a specific medium to designing specifications that can be applied across media, as commented by one of the reviewers:

> 'The main thing that has changed in the design for screen and is increasingly being absorbed into print-based media, is that designers are no longer designers of forms, but designers of specifications. If it's print, you are a designer of a single specification or one configuration, if it is cross-media work, then you are a designer of multiple specifications for a given content.'

9.5.7.3 Usability

The traditional typographic issue of functionality (especially legibility and readability issues) has always been a major concern for designers. However, the introduction of digital media has introduced a new set of issues to address. Differences in screen display (for example quality, surface, size, ratio, refresh rate, orientation), rendering technology and default system fonts have made type functionality a key consideration of digital design. The issue of accessibility[5] featured heavily in the discussions surrounding the functionality of screen typography. Designers were concerned about the possible effect accessibility guidelines have on the actualization of their design, and often view them as an impediment to their creative freedom. However, the issue of accessibility has to be taken into context and relayed back to the needs of the user, as one reviewer remarked:

> 'When talking in terms of "accessibility" you should also raise the issue of "usability"... You can have a site that is entirely accessible but totally unusable where the usability is the human side of things, and accessibility is the machine side of it. So it's interesting that you've all focused on this term that actually relates to the machine and not the actual person. A designer relates to people and not to a machine.'

Analysis of the reviews have identified the importance of addressing typographic usability issues, especially within an interactive environment, suggesting this should be included in the area of specialist knowledge within the framework, due to the particularity of medium-specific guidelines[6].

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[5] Accessibility relating to online content is a term used to describe the degree to which a web page is usable by as many people as possible (especially those with disabilities) without modification.

[6] In 1999, the Web Accessibility Initiative (WAI), part of the World Wide Web Consortium (W3C) published the Web Content Accessibility Guidelines (WCAG1). These are detailed and definitive guidelines on how to create accessible websites.

9.6 Refinements to the Framework

9.6.1 Framework Revision Summary

Table 9.11 lists and describes areas of the framework where revisions were made in response to the review. Figure 9.3 illustrates the individual framework components (numbered from 1 to 4), as referred to in Table 9.11.

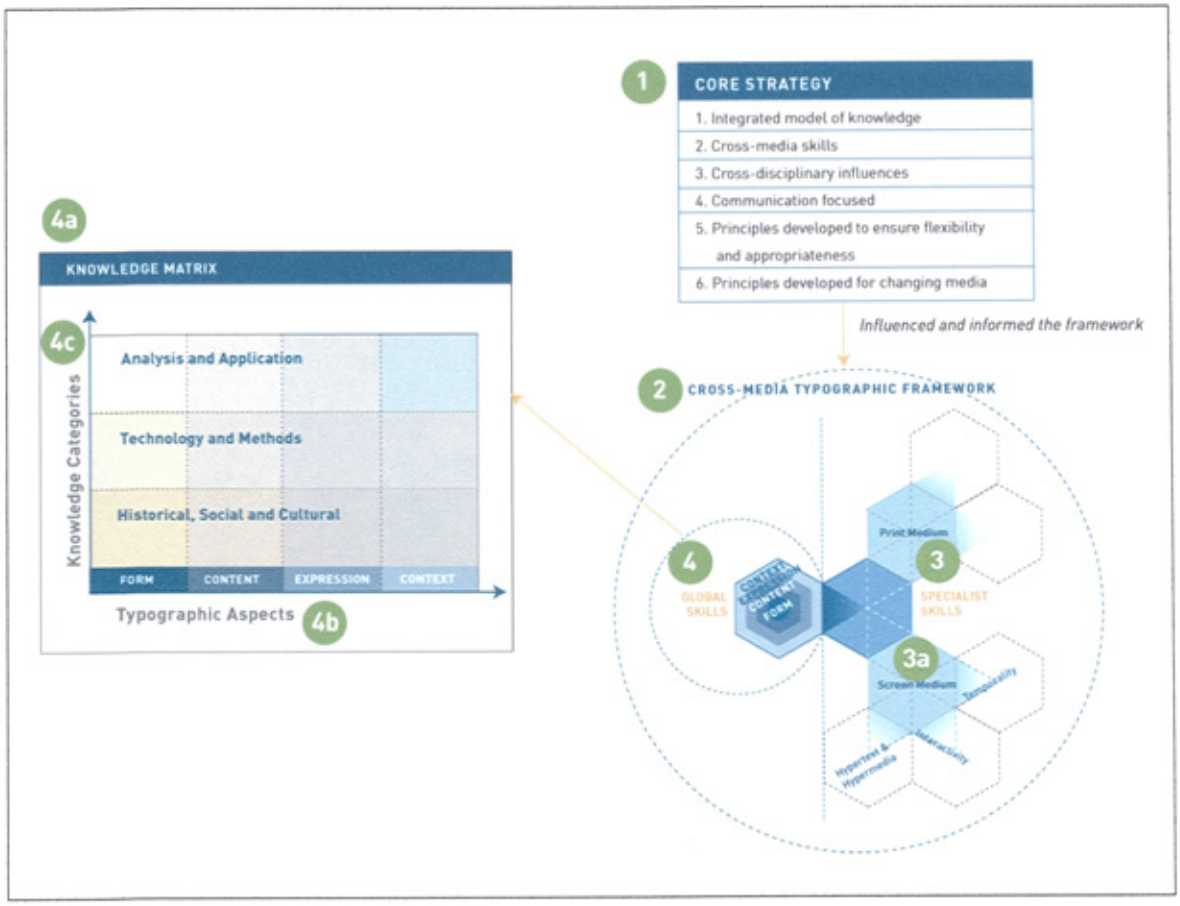

Figure 9.3. Framework Components

Framework Components	Pre-Review	Criticism	Post-Review Revision	Affected Areas (Refer to Figure 9.3)
Core Strategy	Integrated model of knowledge	The continued separation of screen and print expertise reflects the current hybridization of the media, rather than an anticipated future of media convergence.	Revising the framework diagram to reflect the idea of media convergence. Addition of new specialist skills derived from the print media.	3
	Cross-media skills	None	No revision	Not applicable (N/A)
	Cross-disciplinary influences	Cross-disciplinary skills should also include skills outside of new media.	An additional subject to be included into the framework is 'usability' – the issue of usable and accessible design.	3a
	Communication focused	None	No revision	N/A
	Principles developed to ensure flexibility and appropriateness	The presentation and sequence of the Typographic Aspects implies rigidity in its application.	Developing several versions of the framework, demonstrating different contexts of use, e.g., a version based on a user's skill levels and knowledge.	2
	Principles developed for changing media	None	No revision	N/A

Table 9.11. Summary of Framework Revisions

Framework Components	Pre-Review	Criticism	Post-Review Revision	Affected Areas (Refer to Figure 9.3)
Context	Not described	Questions were raised on how the framework works in context with external factors such as teaching strategies and design elements.	To include the contextual factors into the final framework. Additionally, to illustrate possible student engagement with the framework during their undergraduate education.	2
Global Skills	Description: *Global Skills* consists of a set of core skills, which are transferable across media.	There was some debate regarding the terminology of 'Global Skills' as some reviewers suggested that 'Basic Skills' was a more appropriate term.	No revision was made, as the term 'global' is a clearer description of the transferable aspects of the skills.	N/A
Typographic Aspects	Categorization	Most reviewers agree that the categories do describe the typographic landscape but cautioned that they should not be too tightly defined.	The descriptions have to be broadened and statements made about the limitations of the categorization.	4
	Sequence	Some reviewers questioned whether the sequence reflected a teaching rather than a learning sequence. There was agreement it should reflect a more practice-based model, emphasising the Context category first.	Revising the framework diagram to depict a less prescribed sequence. In areas where a sequence has to be presented (e.g. in the Knowledge Matrix), the current sequence could be reversed to reflect a practice-based model.	4 4a

Table 9.11. Summary of Framework Revisions (continued)

Framework Components	Pre-Review	Criticism	Post-Review Revision	Affected Areas (Refer to Figure 9.3)
Knowledge Categories	1. Historical, Social and Cultural 2. Technology and Method 3. Analysis and Application	None	No revision	N/A
Specialist Skills	*Specialist Skills* consists of a set of medium-specific principles developed for application in different media.	The separation of medium-specific principles was criticized as contradictory to the idea of an integrated model of knowledge.	Similar to the revision described for the first core strategy.	3
New media attributes	Hyper-textuality Interactivity Temporality	All reviewers supported the selection as representative of current screen-based environment. However, some suggested that it needed to include the attribute of dynamic content design.	The addition of 'specification design' in the attribute of Temporality.	3a

Table 9.11. Summary of Framework Revisions (continued)

9.6.2 Cross-media Framework Visualization

Several versions of the framework have been developed in order to offer a more comprehensive depiction of its structure, approach and content, as well as to illustrate it in context with its application. Figure 9.4 illustrates the comparison between the pre-review and post-review framework. Concentric circles have replaced the basic hexagonal shape of the original diagram. This shape allows a more flexible configuration between the different parts of the framework and, importantly, does not imply a predetermined sequence between its elements. The reconfiguration of the framework has eliminated the explicit medium separation between specialist skills and instead integrated them into one area. The issue of usability has also been identified from the focus groups as an additional specialist skill that should be included in the framework.

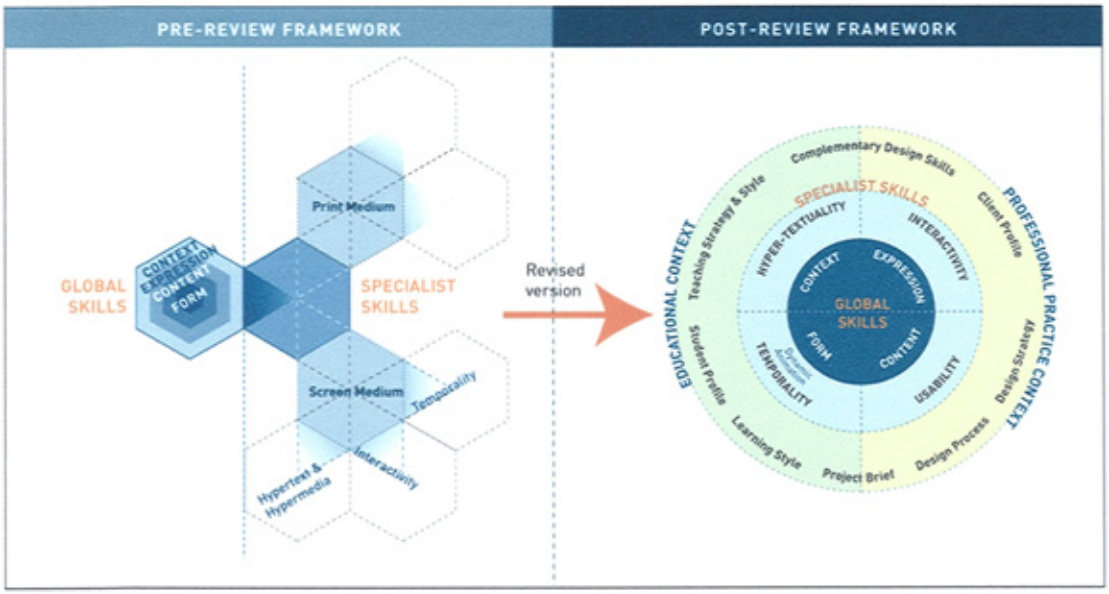

Figure 9.4. Comparison Between the Pre-Review and Post-Review Framework Representations

9.7 Final Version of the Framework

9.7.1 Final Version

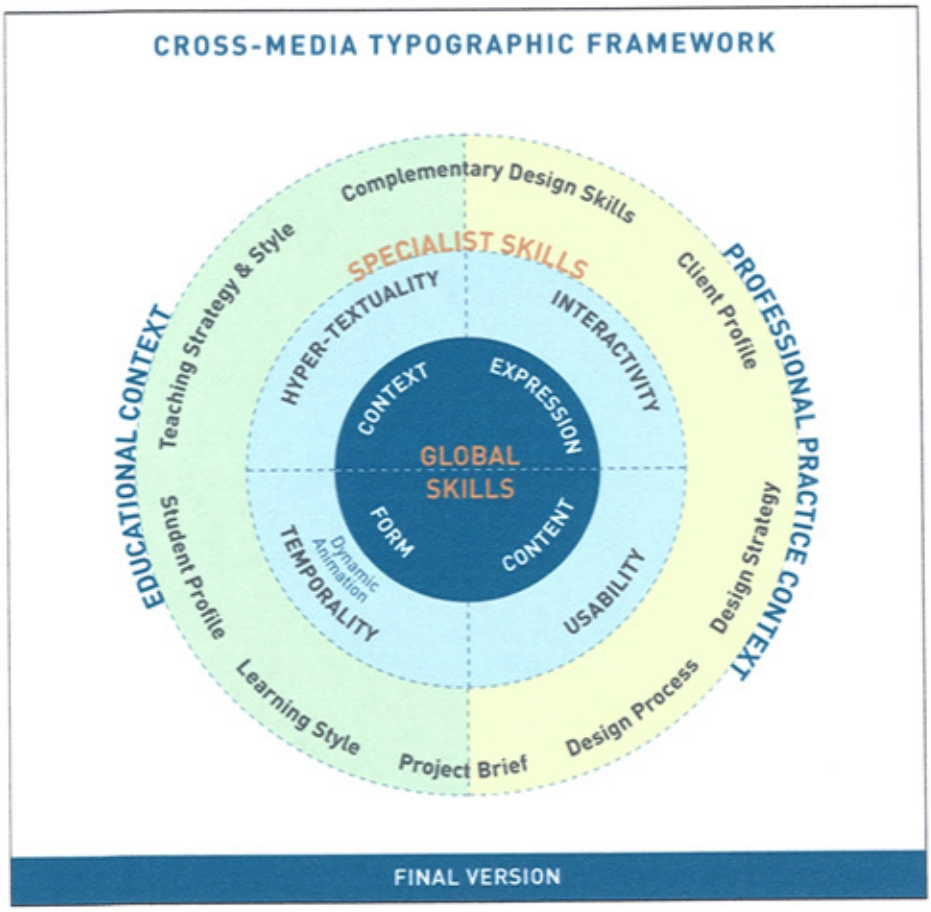

Figure 9.5. Final Version of the Cross-Media Typographic Framework

Figure 9.5 is the final version of the framework. It illustrates the contextual relationship between the global and specialist skills with external influencing factors. These factors interrelate and sometimes overlap (for example the 'Project Brief' and 'Complementary Design Skills' factors) across both educational and professional practice contexts. At its base, the framework consists of two key components: *global* and *specialist skills*. *Global Skills* contains theories and principles derived from historical and practice-based sources. It is a set of core concepts and skills (grouped in an historical, technological and application context), which are global in their applicability. The *Global Skills* area is built around four communication aspects of typography: Form, Content, Expression and Context. Each category highlights different sets of skills and knowledge related to each specific communication function. They contain methods to evaluate, describe and analyse typographic application within the larger context of a designed artefact. For more details of these four aspects, refer to Chapter 7, Section 7.5.

The second component, *Specialist Skills* consists of a set of medium-specific skills developed for application in different media. There are four areas of specialism: Hyper-textuality, Interactivity, Temporality and Usability. Hyper-textuality refers to the concept of linking media elements, such as text, images and animation across a network (refer to Chapter 7, Section 7.6.1 for a detailed description of this concept and its relevance to typography). Interactivity refers to the ability of users to select, change or customise media elements that they access (refer to Chapter 7, Section 7.6.2). Temporality refers to the passage of time through virtual environments. This concept can be discussed under two main themes: animation and dynamic content. Animated or kinetic typography is the most progressive area of screen-based typography and owes its development to the film medium (refer to Chapter 7, Section 7.6.3). Dynamic content (a new addition to the framework as a result of the peer review) refers to the shift in design emphasis, from that of designing form to that of designing specifications. This shift facilitates the increasing ephemeral nature of screen-based content such as web blogs and chat sites (see Chapter 9, Section 9.5.7.2) where content changes on a regular basis. And finally, discussions during the peer review surrounding usability issues was deemed important enough to justify its addition as a fourth specialist skill. The issue of usability has become more pertinent with the introduction of different rendering and imaging technology. Additionally, specific guidelines relating to accessibility issue must become more prominent in typographic education (refer to Chapter 9, Section 9.5.7.3).

The contextual factors that influenced the application of the framework are divided into educational and professional practice. These factors were included into the final framework to illustrate the relationship between the framework and key elements of each practice. It is evident from the Action Research projects (refer to Chapter 8, Section 8.6.2 and 8.6.3) and the peer reviews (refer to Chapter 9, Sections 9.5.4 and 9.5.5), that different concerns of each practice has to be taken into account when deriving value from the framework. While some of these factors are particular to one practice (such as teaching and learning styles), other factors such as an individual's design skills or a project brief are influencing factors for both practices.

9.7.2 Engaging with the Framework

Figure 9.6 is a time-lapsed depiction of the global and specialist skills area of the framework. It presents both its three-dimensional and two-dimensional representation. This visualization suggests a possible subject progression and engagement emphasis relating to different levels of skills. The skill levels range from a novice to competent designer. Preliminary research by Dorst (2004) into the levels of design expertise demonstrated by undergraduate students has indicated

the presence of the first three levels of Dreyfuss's (2002; 2003b; 2003a) model[7] of expertise development. Each level (refer to Chapter 8: Section 8.6.2.5) suggests a different combination of engagement with the typographic aspects. This framework proposes a layered but simultaneous engagement with all four areas of the typographic aspects rather than a stage development moving from one aspect to another. As the student develops, their levels of engagement with each typographic aspect will increase and deepen, while the emphasis of each aspect will shift according to their skill level. For example, in the approach advocated by this framework (though not restricted to it), form and content aspects are emphasized at the novice level, while content and expression are emphasized at the competent level.

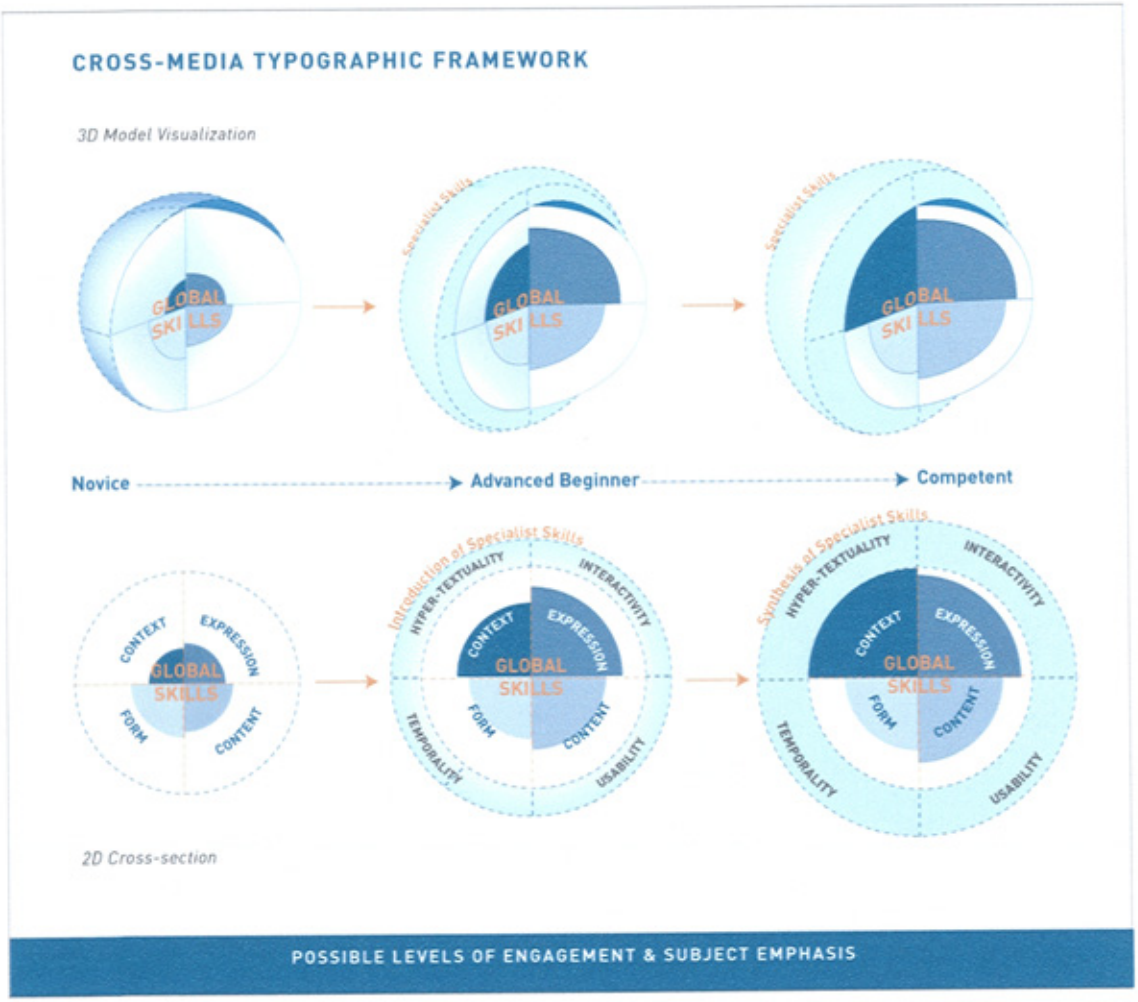

Figure 9.6. Time-Lapsed Versions of the Cross-Media Typographic Framework

[7] Dreyfuss's model (introduced in Chapter 8) distinguishes seven levels of expertise and according to Dorst (2004) corresponds to seven ways of perceiving, interpreting, structuring and solving problems. Briefly, these seven levels are: novice, advance beginner, competent, proficient, expert, master and visionary.

9.7.3 Knowledge Matrix and Expertise Levels

Figures 9.7, 9.8 and 9.9 illustrate how students with different skill levels engage with the framework's global skills. These diagrams were developed by cross-referencing data collected during the action research projects (as described in Chapter 8) with existing research relating to the development of expertise in design (Cross, 2003; 2004; Cross et al., 1994; Dorst and Cross, 2001; Dorst, 2004; Atman et al., 1999; Ahmed et al., 2003; Ericsson and Smith, 1991; Lawson, 2004; Popovic, 2003; Casakin and Goldschmidt, 1999). They are based on the Knowledge Matrix (see Chapter 7, Section 7.5.3), which maps the relationship between the four typographic aspects and the three types of knowledge categories with levels of engagement. In these diagrams, the two horizontal axes represent the typographic aspects and knowledge categories respectively, while the vertical axis illustrates probable levels of learning engagement. Educators can refer to them during their curriculum planning, guiding their decisions regarding subject emphasis and progression. It is hoped that by relating the knowledge matrix to the expected skill and knowledge levels of the students, educators will be better able to modify the framework to suit the individual needs of students.

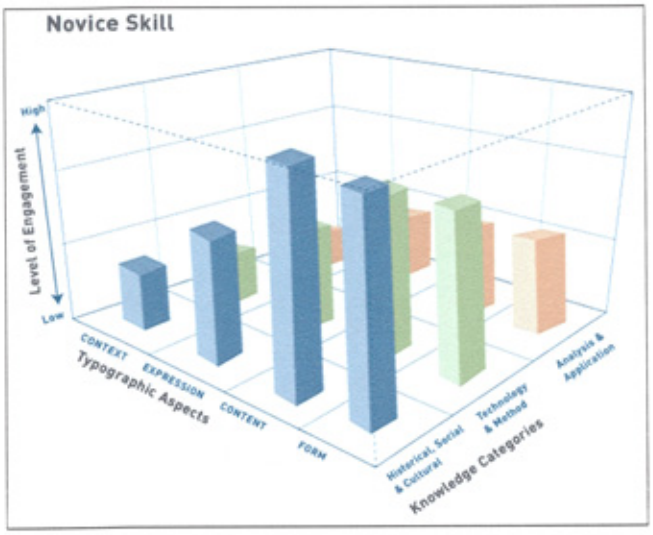

Figure 9.7. Level of Engagement: Novice

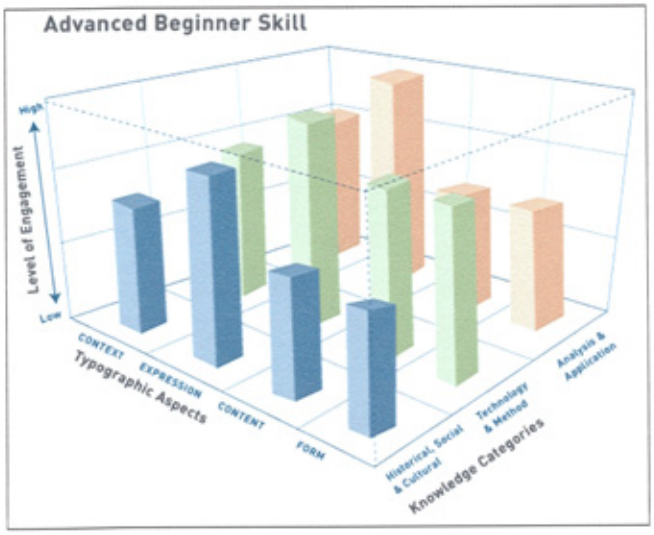

Figure 9.8. Level of Engagement: Advanced Beginner

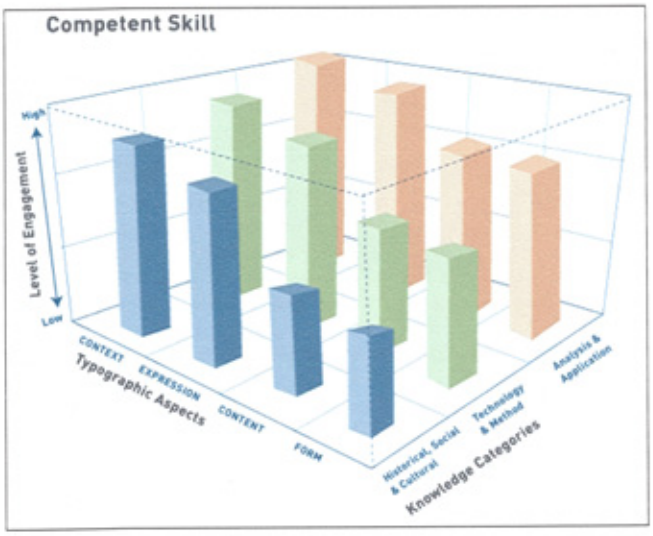

Figure 9.9. Level of Engagement: Competent

Generally, the framework predicts a diagonal progression, beginning from the [(*Form*) and (*Historical, Social and Cultural*)] area to the [(*Context*) and (*Analysis and Application*)] area (refer to Figure 9.10). Novice designers are much more likely to engage with the historical, social and cultural category at the beginning of their skill acquisition (refer to Chapter 8: Section 8.6.2 for the mapping of expertise levels with typographic application). Understanding the historical context, becoming familiar with subject vocabulary and learning basic principles are natural and uncomplicated entry points into a new subject. In his study of three exceptional designers, Cross (2003) identified three levels of process common to these designers. At the lowest level, the designer draws upon domain-specific or more general scientific knowledge, also described by Cross as 'first principles'. These principles are normally stressed in design education and practice. Novice designers with limited experiential knowledge are more likely to describe problems at very concrete and specific levels (Popovic, 2003) and use a 'depth-first' rather than a 'breadth-first' approach (Ericsson and Smith, 1991). This is reflected in the concentrated levels of engagement within the *Form and Content*, and *Historical, Social and Cultural* categories.

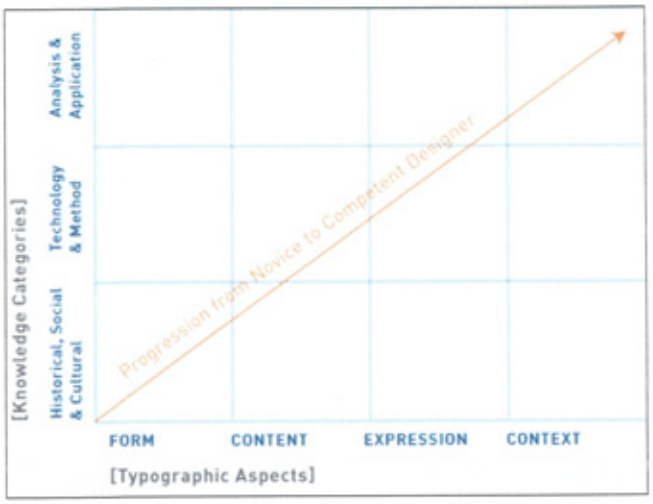

Figure 9.10. Progression from Novice to Competent Designer

Studies have shown that novices make the transition to the next level by acquiring strategic competence in the domain-specific methods (Etalåpelto, 2000). They begin to acquire more domain-specific strategies and knowledge such as those represented in the *Technology and Method* category. They start to develop an understanding of the situational aspects of design problems and, unlike the novice designer, no longer follow rigid rules. Advanced beginners widen their breadth of domain-specific knowledge as well as proceduralising their domain knowledge as they begin to draw connections between different areas of knowledge. This transition is reflected in the wider spread of engagement across the two axes of knowledge (see above).

Competent designers approach and solve design problems differently than a novice designer. According to Dreyfuss (2003a; 2003b; 2002), problem solving at this level takes on a trial-and-error character, and there is a clear need for learning and reflection. In comparison, expert designers that have been studied (Cross, 2003) tend to use more abstract categories to describe their problem and solution. This is due to their ability to encode the problem into deep levels of representation, which enable them to determine the solution applicable to the problem (Chi et al., 1982). Although not considered to be experts, competent designers can begin to develop this ability by reviewing existing design examples for better knowledge and strategy representation. They will require higher levels of engagement with the *Application and Analysis* category in order to interrogate and reveal different types of solutions developed by expert designers. The engagement level is focused around the *Context* category because they are beginning to develop a broader approach to the problem. It requires them to not only expand their own domain knowledge but also to move into other domains, represented as specialist skills in the framework.

9.8 Summary and Conclusions

Panels of design educators and professional practitioners reviewed the framework and have suggested improvements to its approach, structure, content and application. The comments and discussions were varied and diverse, ranging from the philosophical influence of the framework to practical concerns regarding its applicability. However, though the discussions were varied, a number of key themes emerged. The main discussion centred on the level of media integration advocated by the framework. Reviewers were adamant that the framework should reflect a future model of convergent media, instead of a continued separation between print and screen. They agreed that the visualization of the framework was misleading and reinforced this division further. Questions were also raised about the perceived sequence of the typographic aspect groupings. Whilst some reviewers agreed that having a recommended sequence could be useful, others warned that it could imply a prescribed route of teaching and learning, which may not reflect the reality of teaching practice. Providing examples of use and variations of the framework could bridge the gap between an 'idealistic' and 'real world' model. Demonstration of the framework's flexibility and its engagement with practice is important to convince users of its usefulness and practicality.

One of the main objectives of the peer reviews was to investigate possible applications and tools that can be derived from the framework. Reviewers were asked to envision different contexts of use and suggest ways to improve its applicability to practice. First impressions from the reviewers were that the framework would be beneficial within an educational environment. Factors affecting its application were discussed and it was unanimously agreed that teaching practices and student profiles would have an effect on how the framework will be applied. All reviewers agreed that, in its current form, the framework would need to be simplified and adapted for professional design practice application. In this environment, it is perceived as a tool to aid strategic decision-making rather than for tactical or operational decisions[8].

The framework was revised based on the key themes discussed above. The main revision involved altering the visualization of the framework to reflect a more integrated model of knowledge between different media and subjects. Variations of the framework have been generated to illustrate the different levels of engagement and subject emphasis relevant to a student's skill level. A contextual version depicting the various factors affecting the use of the framework was

[8] According to Campbell et al (2002), management decisions within any organization can be classed into three broad and sometimes overlapping categories: strategic, tactical and operational. Strategic decisions are focused on achieving sustainable competitive advantage. Tactical decisions are concerned with how corporate objectives are to be met and how strategies are implemented, while operational decisions are concerned with shorter-term objectives and involve day-to-day management.

important to position it within its environment of use, and to provide contextual links to other issues. The main areas of improvement to the framework are its content and structure. Its content has been validated and additional areas within the local skills area have been incorporated. Its structure has been consolidated by merging both print and screen media skills. By advocating a non-sequential and flexible approach to subject grouping, it has become more representative of a real-world model of application. Additionally, the reviews provided the study with an opportunity to discuss further developments and have informed the study on future post-doctoral research. The concluding chapter will discuss these issues in depth and provide a summary of the study's final conclusions.

CHAPTER 10: CONCLUSIONS

Description of the Final Conclusions, Recommendations and Further Research

10.1 Introduction

The emergence of digital media and its pervasive use has presented designers with new and imminent challenges. Not only do they require the introduction of new areas of knowledge, they also require a re-evaluation of their existing knowledge. This study investigated how new media has changed the role, relevance and application of typography for a designer, and identified factors that have affected this change. It also identified attributes of a new typographic framework that will guide the development of typographic knowledge for cross-media design environments.

The main outcome of this study is a practice-led framework to facilitate the understanding and practise of print and screen typography. This framework has been developed from a designer's point of view and its primary audience is graphic and new media design educators. It proposes an alternate approach to the current structure and content of typographic knowledge in undergraduate graphic and new media design programmes. Additionally, it introduces new content derived from other disciplines to address the changing requirements of screen-based media. Its future ambition will be to improve design practice by developing practical tools that will enable designers to engage effectively in cross-media typography.

10.2 Summary of Research Findings

The aim of this study was to develop a practice-led framework to promote the practise and understanding of screen-based typography. Its main premise was that the current body of typographic knowledge is an unsuitable model to meet the requirements of screen-based media. Its projected outcome was the development of a new framework that would address the requirements and needs of future design educators and practitioners. The main objectives derived from the research aim (refer to Chapter 1: Section 1.2) were designed to investigate which aspects of current typographic knowledge are transferable across media, as well as to identify which characteristics of screen-based media have the most relevance for future typographic applications. As a result, four research questions were identified and used to guide the development of this study. They were:

1. How is typography being understood and practised in screen-based media?
2. Is the current framework of (print-derived) typographic knowledge still relevant for screen-based interactive media?
3. What are the critical issues that will affect the role and application of typography in a cross-media environment?
4. How will these issues be addressed in a new framework?

The study was conducted in three distinct stages: definitions of research questions (Stage One), typographic framework development (Stage Two) and typographic framework evaluation and refinement (Stage Three). The conclusions of these three stages are summarized and will be discussed in relation to the original research questions.

10.2.1 Stage One: Research Questions Definition

Stage One was designed to address the first research question. It explored current theory and application of typography in screen-based media in order to build an accurate portrayal of its current development. This would enable the study to evaluate the relevance of the current body of knowledge in relation to the needs of screen-based media. These are the conclusions reached:

Current typographic framework

1. The principal ontology and epistemology of the current typographic framework is print-derived. Its mono-medium centred approach makes it difficult to integrate the new knowledge and skills required for non-print application.

2. There is limited vocabulary in the existing framework to understand, explain and teach screen-based typography.

3. There is a need for the inclusion of external knowledge in informing the education and practice of screen-based typography.

Current usage of screen-based typography

4. Currently the Internet contains the highest number and greatest variety of content genres amongst the six screen-based media reviewed. Its popularity lies in its accessibility, adaptability and suitability to different types of users, producers and content. These factors will help maintain its presence as the most prevalent interactive medium for the foreseeable future. However, digital television may soon challenge the Internet as the main interactive content delivery channel as the trend towards an integrated digital hub grows.

5. Representing textual information is the most frequent and pervasive use of type in screen-based media, while navigation (in the form of hypertext) is its second most commonly used application. In contrast, the usage of type as an expressive and experimental element is low. Although there is growing interest in using type as an experimental element, its application possibility in current commercial projects is limited due to text's strong denotative quality. Additionally, the medium of screen naturally favours the spatial and simultaneous nature of images rather than the linear and sequential nature of text (Kress, 2003, p.10).

6. The research study has shown that the application of typography in screen-based media is dependent on three main factors: content, visual style and transmission medium. Only the last factor is particular to screen-based media because, unlike print, the form, functionality and technology of different screen-based media (such as the Internet, digital television, personal digital assistant and games console) vary enormously.

10.2.2 Stage Two: Typographic Framework Development

The second stage of the study was designed to evaluate how relevant the current framework is in relation to screen-based media by first identifying the different roles of typography and investigating if screen-based media has influenced their application. Subsequently, the study proceeded to identify the critical issues that would influence the future understanding and application of typography. The result of this stage has enabled the study to identify possible approaches, structure and content for a new framework in order to address these issues. These are the conclusions reached:

Role and relevance of typography in screen-based media

7. There is a general acknowledgement and awareness that screen-based media brings with it its own nature, characteristics, constraints and freedom. However, most respondents consider print-derived knowledge, history, tradition and skills of typography as still crucial to the understanding and development of all types of typography across different media.

8. Despite the viewpoint put forward by media theorists (such as Kress, 2003; Manovich, 2001; Lanham, 1994; Bolter, 1991; Ong, 1982) which suggests that interactive digital media favours the image over text as its main form of communication, designers and educators are keen to focus on the denotative communication value of text. They maintained that the role of text-based communication will not diminish in the foreseeable future, and were certain of typography's role in mainstream visual communication practice.

9. The activity of using type as an expressive tool is not novel; however, it has certainly been enhanced by the time-based and interactive possibilities of screen-based media. Current technology offers designers new possibilities for the manipulation and representation of typographic forms. However, they remain unlikely to displace the fundamental role of typography, which is to be a message carrier.

10. Digital tools have required a diversification of skills from designers, and increased the expectation that designers must be proficient in a wide range of technical and conceptual skills. These factors have indirectly caused the marginalisation of typography within graphic and new media design programmes due to a reduction of teaching time[1], in response to software skills development.

Factors influencing the role of typography in screen-based media

11. The future roles and application of typography will be dependent on four key factors:
    a. **Technology** - Technological factors were found to be around visual quality issues and the loss of typographic display control.
    b. **Characteristics of new media** – Understanding the main attributes of screen-based media has helped to identify typographic and design skills missing from the current body of knowledge.
    c. **Designer's reference frames** *and*

[1] In fact the reduction of teaching time has occurred across all areas of design subjects due to the focus on technological requirements.

d. **Remediation[2] of media** - Remediation refers to the activity of borrowing knowledge from existing media and refashioning it for a new medium. The pace at which this can be achieved depends on the model and frames of references that are adopted, as well as the existence of an appropriate framework to guide this process.

Identifying key attributes of a new framework

12. Six attributes were identified and developed for a new typographic framework. They are:
    a. An integrated model of knowledge
    b. Cross-media skills
    c. Cross disciplinary influences
    d. Communication focused
    e. Principles developed to ensure flexibility and appropriateness
    f. Principles developed for a changeable media

The framework is designed to accommodate increasing cross-media typographic application as a result of media convergence. This is the age of multi-modal communication, where corporate and public messages are delivered through multiple media channels. This convergence requires the identification of transferable cross-media skills that are applicable across a broad spectrum of delivery channels. In addition, new media have brought about new concepts such as 'digitality, interactivity, hypertext, dispersal, virtuality and cyberspace' (Lister et al., 2003, p.13). Understanding these new attributes requires the development of new knowledge and skills for a typographic context. To aid this process, this study reviewed a range of analog and digital media which have reflected these concepts in some form or another.

Historically, typography has been taught from a form-focused perspective that emphasizes the aesthetic output of type, with communication as a secondary value (Jury, 2001; McCoy, 1998; Swann, 1996). However, the introduction of cross-media delivery channels have made the form-focused perspective more difficult to adopt. Aesthetic values of different media are difficult to reconcile, whereas the communication objective of a particular design remains constant regardless of the medium. As a result, evaluating typographic principles based on their communicative function is a more appropriate strategy for cross-media application. The variability of new media technology requires a framework that is able to adapt and

[2] The term 'remediation' is borrowed from Bolter and Grusin's (1999) description of how new media define themselves by borrowing and refashioning earlier media forms such as print, photography, radio, film and television.

change accordingly. The framework must be treated as a 'work-in-progress' and users should be encouraged to apply it in a flexible manner.

10.2.3 Stage Three: Typographic Framework Evaluation and Refinement

The final stage of the study addressed the last research question by developing a new framework based on the attributes identified in Stage Two. The framework was applied and tested through a series of action research projects with second year design students. The framework was subsequently validated through external peer review sessions. This stage concluded with final refinements made to the framework. These are the conclusions reached:

Framework Approach – Integrated and flexible

13. This framework advocates a two-pronged approach: an integration of global typographic skills that are medium independent, and a separation of specialist media skills. This approach was strongly supported by the results of the action research projects and peer review sessions. Reviewers even considered that the framework proposed in this study was not bold enough to suggest a complete integration of media skills. The framework should explicitly advocate the convergence of media rather than reinforce the existing model of media separation.

14. Flexibility in application is one of the most important attributes of the framework. Differences in student profiles, learning styles and teaching strategies pose various challenges to the application of the framework. These factors make it difficult to predict the environment of use and, subsequently, to evaluate its effectiveness. The action research projects have demonstrated that the framework can be effective in situations where it is used in conjunction with a strategy designed to solve a local problem. Applying the framework without any integration with other design subjects would be ineffective and unrealistic.

Framework Structure – Global skills and learning sequence

15. Global skills categorized by their communicative aspect are a more suitable knowledge model for cross-media typography than skills categorized by their formal and technical properties. Formal properties are reliant on attributes of the delivery medium, while communication roles and values are broadly applicable across media.

16. Traditional pedagogic models of typography have always favoured the approach that learning should take place as the building of concepts towards an overall idea, instead of the understanding of an overall idea with the details learnt later. The former model assumes a sequence of learning, whereas the latter assumes a holistic integration of knowledge. Results

from the action research projects have demonstrated that learning and its subsequent knowledge application do not follow a set sequence (refer to Chapter 8: Section 8.6.2.5). As a direct result, the framework's approach was redefined, explicitly expressing a non-prescriptive learning route and visually expressing it through a redesign of its diagram using a circular model. Additionally, a holistic approach also reflects a closer connection to models of professional practice, where the focus is on contextual understanding rather than on form application alone.

Framework Structure – Specialist Skills

17. Four areas have been identified as relevant specialist skills. They are:
    a. Hyper-textuality
    b. Interactivity
    c. Temporality
    d. Usability

    Each medium has its own concepts, 'grammar' and frames of reference. Each area reflects the different sets of medium-specific typographic knowledge that are relevant for the understanding and application of cross-media typography.

Framework context and application

18. The study concluded that the success of the framework is heavily dependent on the context of its use. This framework is a determined set of approaches, ideas and principles on which to provide a basis for developing an understanding of cross-media typography. However, it is neither definitive nor fixed. It recognizes that the context of use during real-world application will influence how and what areas of the framework will be applied. This study has identified the contextual factors that will influence its effectiveness. These factors are divided into two areas: educational and professional practice. They are listed below:

    Educational Context

    - Teaching strategy and style
    - Student profile
    - Learning style
    - Design process
    - Project brief
    - Complementary design skills

Professional Context

- Client profile
- Design strategy
- Design process
- Project brief
- Complementary design skills

10.3 Summary of Key Contributions

Overall, the key contributions of the study are as follows:

- **Identification of transferable global typographic skills.**
  The identification of transferable skills in typography allows the seamless translation of current print-derived knowledge into other media, without undergoing an extensive re-evaluation and development process (refer to Chapter 7: Section 7.5 and Tables 7.2 to 7.4).

- **Introduction of specialist design skills required for effective cross-media type application.**
  By identifying relevant specialist design skills, the study has highlighted areas which educators and professional practitioners need to focus and expand upon in order to support their future practice. It highlights potential knowledge gaps, and helps practitioners anticipate knowledge requirements (refer to Chapter 7: Section 7.6).

- **Presentation of an integrated model of typographic knowledge and practice.**
  This new framework advocates an integration of skills rather than a continued separation, as reflected in the original framework. It represents a fundamental shift in the current approach to design education and practice by combining two worldviews within a single framework (refer to Chapter 5: Section 5.6.4, Chapter 7: Section 7.4 and Chapter 9: Section 9.6).

- **A curriculum guide aimed at helping design educators plan and deliver typography in graphic and multimedia design programmes.**
  This study recognizes that contemporary design programmes are under pressure to provide students with the widest range of skills in order to produce graduates with marketable skills. Typography, like other traditional design skills (such as illustration) is increasingly being marginalized. By presenting an overview of the required global and specialized skills, this framework will enable educators to prioritize areas of importance and levels of engagement based on their students' requirements (refer to Chapter 9: Section 9.5.4 and Table 9.10).

- **Helping designers remediate their print-derived knowledge with the needs of screen-based media.**
  This framework helps older generations of print-based designers to translate their understanding of typography into screen-based applications, by getting them to focus on the communication rather than formal aspects of typography. By focusing on transferable global skills, designers are able to engage immediately with the needs of screen-based media. For screen-based designers, the value of the framework lies in demystifying typographic

principles with their print-based origins and presenting them as communication objectives (refer to Chapter 6: Section 6.4.2.1, 6.4.2.3 and 6.4.2.4).

- **A subject reference guide for visual communication design students**
  The framework can be used as a practical reference, providing students with a set of principles, concepts and methods that will help them understand the subject of typography in relation to different media (refer to Chapter 9: Section 9.5.4 and Table 9.10).

10.4 Recommendations for Education

Testing the framework in an educational setting has provided some insights on its applicability. In addition, the evaluation of its effectiveness through a series of reflective practice, observations and discussions with students and tutors have informed the recommendations for educational practice.

There is currently confusion on the focus and direction of new media / multimedia design programmes. A contextual review conducted before the action research project stage (refer to Chapter 1: Section 1.6) revealed at least three different curriculum models that British universities have adopted. Even the programme titles vary from 'multimedia design' to 'new media design' to 'interactive media design'[3]. The embryonic nature of the programmes is a reflection of the lack of maturity in the digital media field. Its technology, social purposes and roles are still fairly unstable and are constantly being redefined. However, a general trend observed across all multimedia programmes is a reduced focus on the subject of typography. Typography is given less prominence and as a result is considered to be a peripheral design skill by students. This impression is not helped by typography's traditional reputation of being a 'difficult' subject to learn and apply. This study has shown that typography remains the designers' preferred mode of communication in screen-based media. Therefore, typography should be given a more prominent focus in the multimedia curriculum. In keeping with visual skills, typographic skills should be considered part of the core skill set of multimedia design. These skills should be integrated as part of the curriculum, rather than treated as a specialism.

By changing the focus from a specialism to a basic skill, students are less likely to form an impression that typography is of a higher order skill, thereby requiring additional effort to master. Educators of undergraduate design students are advised to focus on typographic global skills rather than on medium or technical-specific skills. However, the sequence and emphasis given to each category of the global skills is dependent on context. Students' previous knowledge and current abilities and skills, as well as their overall learning styles, must be taken into consideration. For example, the 2nd year students involved in the action research projects mostly engaged with two out of the four areas of the global skills: *content* and *expression* aspects. Their current level of design ability and typographic knowledge restricted their exploration into the other two aspects of *form* and *context*.

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[3] For example, other HE institutions using the term 'Interactive Design' or 'Interactive Media' include: University of Central Lancashire, De Montfort University, The University of Huddersfield, University of Dundee and University of East London, whilst the term 'Multimedia Design' is used by: Northumbria University, Nottingham Trent University and the University of Huddersfield. Lastly, 'New Media Design' is used by: Leeds University and Swindon College (source UCAS website).

Specialist skills should be used to highlight the differences between media, and to encourage students to apply their typographic knowledge appropriately in accordance with the characteristics of the medium. Specialist skills should not be learnt in isolation, and issues specific to one medium should be discussed in relation to others.

In general, educators should realize that the proposed framework has only been field-tested amongst three sets of students from one British university. The mode of delivery was based on the context of this setting, which was a model based on intervention at a micro level. It comprised limited but concentrated time to introduce theories, concepts and examples derived from external disciplines, to aid the understanding and application of typography in cross-media environments. Other models of delivery could be over a longer period of time, and better integrated with the curriculum. Educators are advised to use the framework as a compass, rather than an exact road map aimed at delivering a more relevant teaching model of cross-media typographic application. Furthermore, they are encouraged to derive different models of delivery in order to find one suitable to their context.

Educators wishing to implement and evaluate the effectiveness of the framework do not specifically need to use the action research method. This method was chosen based on its ability to facilitate practice-led research and to allow better understanding of problems faced by educators in their teaching environment. Educators are encouraged to develop other methods of evaluation, such as experimentation or peer review process, in order to suit their evaluation aims.

10.5 Recommendations for Practice

Results of the peer review have indicated that the framework is of strategic value to designers. However, the framework must be simplified from its current form to enable it to be used at operational and tactical levels of design practice. Designers originating from different educational backgrounds will have different issues and concerns regarding the application of their typographic knowledge in cross-media environments. Designers trained in the print medium are likely to find it harder to reconcile their typographic knowledge with the requirements of screen-based media. However, they would have a better grounding and understanding of basic typographic principles than the newer generations of screen-based designers. They would probably be more familiar with the global skills defined in the framework than with the specialist skills area. They are encouraged to focus on specialist skills in order to increase their understanding of the differences between media. They should also engage with the global skills in order to re-contextualize their understanding for a cross-media environment.

Designers trained specifically in screen-based media are likely to lack in-depth typographic knowledge, due to their concentration on medium-specific design skill sets such as interactivity, motion and sound. They are encouraged to focus on the global skills area, where specific typographic principles are discussed and categorized in a manner that will facilitate application across media. Observations from the application of typography in screen-based media (conducted in Chapter 4) have also led to the conclusion that typographic decisions are often considered separately from other design decisions. Integration of typographic elements with other design elements is generally less considered. Designers are advised to consider typographic decisions early in their design process, using the communicative roles and values of the global skills to help them decide on the most appropriate typographic solutions.

Though designers may not require the detail offered by the framework, they can employ its approach and structure to further their understanding and practise of cross-media application. Used strategically, both sets of designers (print and screen-based) can utilise the structure of the framework to help them analyse, describe and communicate their design intent. Designers are encouraged to extract appropriate content from the framework to suit their requirements. For example, designers from the peer reviews expressed an interest in using the Knowledge Matrix (see Chapter 7: Section 7.5) as a tool to help educate clients on matters regarding typographic methods and processes. However, they should realize that the approach, structure and content are linked, and must be careful not to extract individual elements of the framework without first understanding the context for which the framework has been developed.

10.6 Limitations of the Study and Suggestions for Further Research

Recommendations for future work would centre mainly on the further development of the framework, especially for the professional practice-based environment. The framework in its current form is actually a preliminary version derived from an evolving process, and will be progressively improved as more field-testing is carried out. There are different areas of further research peculiar to education and practice. Possible research themes relating to these two areas are discussed below.

10.6.1 Refinement of a Practice-Focused Framework

The time constraints of this study did not permit the framework to be tested within a design practice environment. However, discussions with designers revealed that the framework would require extensive simplification in order for it to be developed beyond its current use as a reference tool, to one of more strategic application such as a planning or evaluation mechanism. An important area of further research will be to focus on developing and testing a simplified version of the framework with designers. Evaluation criteria will need to be devised in order to study the effectiveness of the framework under different design practice settings. Studying the strategic, tactical and operational requirements of different design practices would help customize the tools to suit different operational levels. Additionally, different models of design practices will have different requirements in relation to typographic expertise and knowledge. Identifying these requirements will help inform the development of the tools, as well as revealing the suitability of the framework for different types of design practices.

10.6.2 Applicability of Framework in Different Teaching and Learning Environments

It was apparent from the discussions with design educators that the teaching environments and pedagogic models of different universities vary greatly. They are dependent, amongst other things, on the teaching styles of the tutors, the educational profiles of the students and the institutional pedagogic approach. One of this study's limitations is that the data used to develop and evaluate the current framework is sourced from a single teaching environment. While the action research project and peer reviews have undoubtedly contributed to the refinement of the framework in a rigorous way, in order to continually improve the framework beyond this study's conclusions additional research is required to understand how different design pedagogic models will affect its application and effectiveness. Additionally, as the framework was only tested over a short period of time, it is important to investigate the effectiveness of the framework through a

longer period of use, where it can be integrated from the beginning to the end of a design programme.

10.6.3 Investigating the Differences Between Graphic and Multimedia Design Programmes

This framework was originally conceived and designed for multimedia design undergraduates. However, testing the framework with graphic design students has also demonstrated its value in an established graphic design programme with adequate typographic provision. It has provided graphic design students with an insight into the specialist skills required for screen-based media and demonstrated areas of common knowledge between print and screen-based media. More research is required to examine the differences in requirements between established graphic design programmes and newer, technically-focused multimedia design programmes. An in-depth review of graphic and multimedia programmes would help establish the framework's evaluation criteria for specific sectors and determine if it is robust enough to work in different types of curriculum.

10.6.4 Constant Evaluation of Specialist Skills

Clearly, more research is required to help expand the knowledge of specialist skills as screen-based media matures and develops. The specialist skills identified in this framework are only relevant to the current technological, social and cultural models of screen-based media. These skills will need to be constantly re-evaluated to ensure that they maintain their relevance to the current model, or risk becoming outdated within a very short period of time. This is an inherent weakness of the framework, although it is not uncommon for works of this nature due to the continual development of new media technologies.

10.6.5 Extension of the Framework into Other Design Disciplines

The knowledge matrix (refer to Chapter 7: Section 7.5) developed for this framework can be extended to present a similar organization of knowledge relating to other design disciplines. For example, its categorization of knowledge seemed to provide a suitable framework to describe the knowledge progression of a novice to a competent designer in product, interaction, fashion and graphic design. Additionally, it can be used as a framework to investigate knowledge gaps that may occur in other design skill sets. Future research should be carried out to establish the potential of the framework in relation to other areas of creative design practice, as a 'generic framework' to represent models of design knowledge. This might lead to the adaptation of the framework as a method to organize, describe or analyse current models of design knowledge.

10.6.6 Modelling Learning Progress through the Framework

The application of the framework over a three-year period of an undergraduate design programme, may make it a suitable mechanism to track the learning progress of a student from a novice to a competent designer (Dreyfuss, 2002; 2003a; 2003b). Using the framework to evaluate and track learning progress could lead to the development of a dynamic modelling tool for typographic knowledge.

10.7 Reflection on the Research

10.7.3 Evaluating the Value of the Framework

The development of models and frameworks has always been a major focus of design research. However, Holness (2000) and others (see Darke, 1984; Cross, 1984; 1997; 2000; Hillier et al., 1984; Krauss et al., 1970) argue that most models, while being useful for describing and explaining design as a phenomenon of human social interaction, are not very effective in influencing the way design is carried out. A common criticism is that models are not representative of the true reality of the process of designing due to their reliance on scientific methods and philosophy for their creation.

This framework presents a coherent set of concepts, approaches, strategies, contents and methods relevant to the development of print and screen-based understanding of typography. It is not a definite set of knowledge that has to be followed strictly but instead, taken as signposts towards the understanding of typography. It presents a conceptual model designed to address the challenges faced by current educators and designers. Lowry (1965) classifies models based on their function:

Model Types	Function
Descriptive	To explain selected happenings and is basic to all model types
Explorative	Speculations designed to reveal new structures and possibilities
Predictive	Forecast future states of interested happenings

Table 10.1. Lowry's (1985) Classification of Models

The development of the framework, and the subsequent model that has emerged has been through practice-based rather than theory-based activity. It is a predominately predictive model and aims to suggest strategies to address future challenges of screen-based media. However, it does have descriptive and explorative elements. For example, it can be used as a descriptive model when describing the level of engagement from a novice to a competent designer (refer to Chapter 9: Section 9.6.3). Additionally, it can be used as an explorative tool for an educator when planning a project.

This model combines two worldviews, education and practice, within one framework. Its ambition to integrate both viewpoints has its roots in the circumstances of the research study. As a researcher and designer, I am based in a consultancy environment that is associated with a university. My main role involves design consultancy, however I have on occasion engaged in teaching and research activity relating to graphic and new media design. This mix of professional

and educational practice has led to a personal desire to address issues common to all areas of design practice. However, as the research progressed, it became quite evident that each practice has very distinct requirements. The strategy chosen to address these differences has resulted in the separation of the educational and professional applications of the framework. The scope of this study only extends to testing and evaluating the educational application of the framework; however, discussions during the peer reviews have enabled the study to recommend probable applications for a practice-based environment. In addition working across distinct media, namely print and screen, has been the key driver to the main research questions, and consequently the framework has set out to address issues derived from cross-media application.

Discussions with peers have confirmed the importance of a framework that attempts to combine two worldviews of practice and education; and of print and screen. Surprisingly, it was easier to reconcile the differences between media than it was with practices. This might indicate that the prevailing attitude towards technological changes is more homogenous and accepting than the attitude towards the nature and purpose of design practice[4]. Although the questionnaire survey conducted in the early stages of the research (see Chapter 5) has revealed that the viewpoints of educators and practitioners are similar in terms of their beliefs and values, they differ noticeably in their opinions of the expected worth of the framework. Educators immediately recognized the value of identifying global and specialist skills. This approach aimed to instil the idea of transferable skills in different contexts, and to provide students with a mental model of the relationship between the different aspects of typographic usage. Additionally, educators recognized its potential as a useful reference tool for educators and students alike. Designers, in contrast, were less optimistic of the value they could extract from the framework, and only considered it as a strategic tool, for example helping them to communicate their design process to external audiences. Whilst most designers were enthusiastic about the framework, some were reluctant to engage with it in its current form as it was considered to be too theoretical and detailed. It appears that the ambition to deliver a framework addressing common problems between education and practice presented a much greater challenge than initially predicted. As a result, the study acknowledges that tools or models derived from the framework will need to be developed specifically for the operational requirements of designers.

[4] Consider the uproar raised by the design community when Hillary Cottam of the Design Council was named as the Design Museum's '2005 Designer of the Year' (Design Museum, 2005). The design community was polarised in their opinions on whether Cottam's role as a design strategist deserved the award, as her work is considered to be collaborative and strategic rather than creative and authorship-based (see articles by Deyan Sudjic, 2005; Heartfield, 2005; Thackara, 2005).

And finally, the action research projects were an important step in understanding the complexity of teaching practice and how the framework could be applied in such an environment. Due to the limiting factors of time, opportunity and resources, the action research projects were the best possible test that could be implemented within the confines of the PhD study. On reflection however, a more definitive evaluation of the framework came from the peer review due to the range and level of experience and expertise of the reviewers. The peer reviews reinforced general observations made during the action research projects and allowed the study to draw conclusive findings.

10.7.2 A Practice-led Approach

Research is used either to test or generate theory in a systematic, formal and rigorous manner. Ultimately, the purpose of theory is to improve understanding of the subject and to inform practice. However, in reality, the relationship between research and practice is often disjointed and unconnected. This distance is even more evident in the design discipline, where design has always been seen as a creative (meaning intuitive and practical) rather than an academic (meaning theoretical and scholarly) subject. I shared this general view of the 'academic' approach when I was a full-time practitioner before undertaking this study. And, because I still consider myself to be a practising designer even after undertaking the role of a researcher, the motivation to develop research through and for the purpose of practice (Frayling, 1993) was high. Having been through the process of developing and conducting practice-led research, I would argue that this approach is the most direct way of linking research with practice. If practitioners are reluctant to engage with research and theory building, the development of the discipline will be left to non-practitioners without a tacit understanding of practice-based requirements, with a high possibility of resulting in further disengagement of research from practice.

This practice-led approach also enabled a more iterative and responsive process in the development of this study. In keeping with action research principles, the model for this study was closer to an iterative design process than a predetermined linear research process. The data driven method of theory development has enabled this study to be much more responsive to the needs of practice. As a result, the final outcomes of this study have been a true reflection of the use of rigorous research methods to address problems encountered in practice, and have informed practice with new knowledge.

This study has demonstrated that current approaches in typographic education require a careful re-evaluation in response to the changing landscape of communication media. In addition, typographic knowledge needs to develop (or appropriate) new frames of reference in order to

develop theories, concepts and methods relevant to cross-media design applications. This study has only scratched the surface of this phenomenon and, in the process, demonstrated that much more research is required in order to address the growing gulf between typographic knowledge and current technological advancements. It proposes a fundamental shift in how typography has been understood, taught and practised for the past five hundred years. It is hoped that educators and designers will recognize the significance of this problem and proactively bridge this gap, either through this framework or their own research. Leaving behind our old habits is not easy, but it is achievable.

> *The difficulty lies, not in the new ideas, but in escaping the old ones, which ramify, for those brought up as most of us have been, into every corner of our minds.*
> John Maynard Keynes (1936, p.viii)

GLOSSARY

Description of Specialist Terms Used

Accessibility

Accessibility is a term that refers to the ease of which a system is accessible to as many people as possible without requiring modification from the user's system (especially for people with disability). Web accessibility refers specifically to the practice of making web pages on the Internet accessible to all users, especially those who use assistive technology such as screen readers and screen magnification. In 1999, the Web Accessibility Initiative (WAI), part of the World Wide Web Consortium (W3C) published the Web Content Accessibility Guidelines (WCAG1), which have been generally accepted as the standard guidelines on web accessibility.

Analphabetic

'A typographic symbol used with the alphabet but lacking a place in the alphabetic order. Diacritics such as the acute, umlaut, circumflex and caron are analphabetics' (Bringhurst, 1997, p.287).

Authorship

Authorship is 'the idea that meaning and quality of a text or other product is explained by name, identity and inherent abilities of the individual person who made it rather than seeing a text as the outcome of wider cultural forces or its meanings arising in the act of its being read' (Lister et al., 2003, p.383).

Computer Mediated Communication (CMC)

In this thesis, the term CMC is used to describe the 'direct use of computers in a text-based communication process' (Mann and Stewart, 2000, p.2) that would require users to interact directly with the computer systems via a keyboard or similar interface.

Connotation

A term used in communication studies, based on Ferdinand Saussure's work on understanding how meaning is derived. Roland Barthes' then developed it further in his theory on two orders of signification (the first order is denotation). 'Connotation is the term Barthes uses to describe one of the three ways in which signs work in the second order of signification. It describes the interaction that occurs when the sign meets the feelings or emotions of the users and the values of their culture' (Fiske, 1990, p.86). Connotation is generally arbitrary, specific to one culture and works on a subjective level.

Convergence

Convergence is a term 'used to describe the ways in which previously discreet media form and processes are drawn together and combined through digital technologies' (Lister et al., 2003, p.385). According to Lister, convergence can occur at two levels: production and distribution. At the production level, newspaper, music and television, which all once had very divergent production sources, can now all be produced through the computer. At the distribution level, previously divergent informational networks such as news, music and entertainment are being absorbed into a single delivery network, which is the Internet. Additionally, convergence also refers to the current trend of concentrating media ownership through mergers of large media corporations from different sectors, such as the Time-Warner and AOL merger in 2001.

Cross-media Typography

Cross-media typography refers to the understanding and application of typography across a range of media, without an emphasis on any specific media.

Denotation

Denotation 'describes the relationship between the signifier and signified within the sign, and of the sign with its referent in external reality...This refers to the common-sense, obvious meaning of the sign' (Fiske, 1990, p.85-86).

Diacritical Marks

Diacritic are language dependent marks that are added to specific letters to modify their pronunciation.

Digital Typography

The digital form of type, stored as mathematical formulae. Also sometimes used to describe type that appears in a screen-based media.

Font

In metal type, this term refers to a set of characters of a specific typeface, in a particular size. In digital type, the font is the glyph palette stored as Vector-based digital outlines. It has no reproduction size limit.

Framework

A framework is a basic structure around which something is formulated or built. In this research study, it is an extensible structure for describing and organising a set of concepts, methods, technologies, and cultural changes relating to the subject of typography.

Graphic Design

William Addison Dwiggins first coined the term 'graphic design' in 1922. Graphic Design as defined by the American Institute of Graphic Arts (AIGA) is the profession that plans and executes the design of visual communication according to the needs of audiences and in the context for which communication is intended. They also defined a Graphic Designer as 'someone who plans, analyzes, creates, and evaluates visual solutions to communication problems. Their work ranges from the development of strategies to solve large-scale communication problems, to the design of effective communication products, such as publications, computer programs, packaging, exhibition, and signage' (American Institute of Graphic Arts, 2006).

Hypertext

The concept of Hypertext is generally credited to Vannevar Bush, who published a short article in the Atlantic Monthly in July 1945, 'As We May Think' (Bush, 1945). However, the term 'Hypertext' is coined by Theodor H. Nelson in the 1960s as a description of 'non-sequential writing – text that branches and allows choices to the reader, best read at an interactive screen' (quoted in Landow, 1994, p.4). Hypermedia denotes an information medium that links verbal (text) and non-verbal information (visual information, sound, animation and other forms of data). Sometimes the terms Hypertext and Hypermedia are used synonymously.

Ideogram

'A character or graphic symbol designed to represent an idea or concept' (Livingston and Livingston, 1992, p.103). Examples of ideographic writing systems include Egyptian hieroglyphs and Chinese characters.

Interactivity

'Allowing or relating to continuous two-way transfer of information between user and the central point of a communication system such as a computer or television' (Collins Concise Dictionary, 1999)

Kerning

To kern is to manually adjust (tightening or opening up) the spaces between pairs of letters.

Leading

In metal type, this term refers to the strips of lead inserted between lines of metal type to increase space. In digital type, the term refers to the space between different lines of text.

Legibility

This term describes the recognition level of individual letterforms. This could be affected by a number of factors such as text size, contrast between similar letters or the quality of printing or display.

Medium / Media

'Broadly, an intermediate agency that enables communication to take place. More specifically, a technological development that extends the channels, range or speed of communication. In a broad sense speech, writing, gestures, facial expressions, dress, acting and dancing can all be seen as media of communication' (O'Sullivan et al., 1994, p.176). In this thesis, this term is generally used to refer to the means of communication (for example, radio, television, newspaper, books, photographs, films and records).

Multimedia / New Media Design

These two terms are sometimes used interchangeably and refer to the practice of designing digital and interactive content for digital media such as the Internet, World Wide Web, video games, interactive television, mobile phones, CD-ROM and DVD-ROM.

Multi-user Domain (MUD)

This is a term derived from network gaming culture to describe a multi-player computer game that combines elements of role-playing games (RPG) with instant messaging chat rooms. The game is usually text driven where players interact with each other and their surroundings by typing commands (Wikipedia contributors, 2006d).

New Media

A term used to describe a field of study that has developed around cultural practices, with the computer playing a central role as the medium of production, storage and distribution (Wikipedia contributors, 2006a). It is also sometimes used to describe a group of mass media based on new information technology, such as the Internet, World Wide Web, video games, interactive television, CD-ROM, DVD-ROM and other forms of multimedia popular from the 1990s onwards.

OpenType

An 'envelope' font technology developed by Microsoft, and later by Adobe Systems. It was introduced in 1996 and was designed to solve the problems of cross-platform incompatibility of PostScript and TrueType font formats (Baines and Haslam, 2002, p.173).

Pictogram

'Pictorial sign that depicts a simplified representation of a particular object and activity'. (Livingston and Livingston, 1992, p.156)

PostScript

PostScript is a page description language created by Adobe Systems in the early 1980s. This technology enables type and images in PostScript format to be imaged in any PostScript enabled device.

Readability

Readability is the speed and clarity level at which continuous text can be read. Factors which will affect readability levels might include text layout, line length and line spacing.

Remediation

A term introduced by Bolter and Gruisin (1999), it puts forward the idea that the development of any 'new' media always involves a phase of remediation, in which it borrows and adapts from previously existing media. For example, early cinema was based on theatrical conventions while the World Wide Web continues to remediate print-based genres.

Role-playing Game (RPG)

A role-playing game is a type of game in which players assume the role of characters and collaboratively create narratives. Role-playing games can be played offline or online and usually have a predetermined set of rules and guidelines. The choices made by the players will determine the course of the narrative and the outcome of the game (Wikipedia contributors, 2006c).

Screen-based Media

To be used synonymously with screen-based interactive media in this research context. This term refers to specific forms of mass media digital technologies such as the Internet, interactive television, CD-ROM, DVD-ROM, video games and mobile computing, where content is accessed through a digital screen and two-way communication between user and system is enabled.

Serif

A serif is 'a stroke added to the beginning or end of one of the main strokes of a letter' (Bringhurst, 1997, p.296) and is thought to have originated from stone-carving practice during the Roman age.

SMS

SMS is an acronym for 'Short Message System'. It is a mobile phone service that permits the sending and receiving of short text messages between mobile network devices such as mobile phones and Personal Digital Assistants (PDAs).

Technological Determinism

Technological determinism is where 'social change is seen as a direct result of fundamental technological development and innovation' (O'Sullivan et al., 1994, p.83). It has been invariably criticised for ignoring factors in the context of work and the role of human agents. However, it remains the dominant view within the 'common sense' culture (MacKenzie and Wajcman, 1999). Technological determinism has been countered by an opposing view, which puts forward the idea that changes and innovation to media can only occur through already present social processes and structures. Technology in this viewpoint is shaped by cultural, political, social and economic factors.

Teleology

Teleology is described as 'arguments, theories or histories that explain the nature of something not by their original cause but by ideas about the purpose or "end" that something appears to have' (Lister et al., 2003, p.391). Lister and his co-authors go on to describe an example relating to new media, where virtual reality is the 'end' which cinema was striving to achieve in terms of the perfect illusion of reality.

Temporality

The term 'temporality' is defined as the passage of time represented in a virtual space. In relation to new media, it describes the passing of time or a representation of live events viewed from a static screen (Manovich, 2001, p.103).

Text

In communication and cultural studies, the term 'text' refers to 'a message that has a physical existence of its own, independent of its sender receiver, and thus composed of representational codes' (O'Sullivan et al., 1994, p.317). Interpreted in this way, books, records, letters and

photographs are texts, and so too is a recording of a television show or a transcript of speech. However, this thesis uses this term specifically to refer to the representational codes of a message in alphabetic form.

TrueType

'TrueType is an online font standard originally developed by Apple Computer in the late 1980s as a competitor to Adobe's Type 1 fonts used in PostScript' (Wikipedia contributors, 2006b).

Type

'The physical object, a piece of metal with a raised face at one end containing the reversed image of a character' (Baines and Haslam, 2002, p.173). It is also sometimes used as an abbreviation for typeface.

Typeface

A family of fonts of related design, usually comprising an alphabet of letters, numerals and punctuation marks.

Typography

The arrangement and use of type (physical or digital) to deliver an intended message.

Usability

Usability is a term that refers to the ease with which people can use a human-made tool to achieve a particular goal. In the context of human-computer interaction, usability refers to the efficiency with which a user can perform a required task. According to Brink et al (2002, p.2-3), the concept of usability relies on several, sometimes conflicting design goals: functionally correct, efficient to use, easy to learn, easy to remember, error tolerant and subjectively pleasing. As a result of these conflicting goals, the context of the design will determine the priority of the design goals.

Weblog

Weblog is a type of website that contains journal entries, posted on a regular basis and displayed in reverse chronological order. In a community weblog, multiple users can contribute to the discussion threads available on the site.

WWW

WWW is an acronym for 'World Wide Web'. 'A vast network of linked hypertext files, stored on computers throughout the world, that can provide a computer user with information on a huge variety of subjects' (Collins Concise Dictionary, 1999).

WYSIWYG

An acronym for 'What you see is what you get'. This term refers to the computing concept of being able to view and edit content that appears to be very similar to the end result. It is usually used for Web (HTML) authoring and word processor applications.

BIBLIOGRAPHY

Structured List of Works Cited in the Thesis

The following is a list of works that have been referred to during the course of this study. They are grouped in categories based on the final version of the literature map (see Figure 2.3 in Chapter 2). However, not all the literature referred to in this study is evident in the literature map, for example works listed in the Research Methodology section. This is because the focus of the literature map is on the subject of screen-based typography and not specifically about research methodology. Generally, works[1] are categorised based on their contribution to this study rather than their overall content. Additionally, works that were key to the development of this study are indicated in bold.

1.0 Typography

This section deals with works written about the subject of typography and includes works related to the history of the alphabet, history of print, reading and literacy. Works in the 'History of Print' section provide a historical background to the development of print and its effects on society, while works in Sections 1.2 to 1.4 illustrate the range and type of typographic knowledge produced in the Western world. Most, come in the form of practical knowledge such as those found in typographic textbooks and manuals, however other works also explore more philosophical and aesthetic issues such as Eric Gill's 'An Essay in Typography' and the earlier section of Jan Tschichold's 'Die Neue Typographie'. Articles in the 'Typographic Education' section chart the ongoing discussions surrounding the impact of technology on typographic skills and learning. Recent studies on screen-based typography are located in Sections 1.6 and 1.7, where the main focus has been on legibility, type form imaging and type form creation issues. The final section lists current examples of screen-based typography found in different disciplines such as digital art, information mapping and commercial film titles.

1.1 History of Print

Chartier, R. (1987a) *The cultural uses of print in early modern France.* Princeton: Princeton University Press.

Chartier, R. (1987b) *The culture of print: Power and the uses of print in early modern Europe.* Princeton: Princeton University Press.

Chartier, R. (1989) 'Meaningful forms', *Liber*, 1, pp. 8-9.

Chartier, R. (1994) *The order of books.* Cambridge: Polity Press.

[1] For example Steuer's work, 'Defining virtual reality: Dimensions determining telepresence' (1995) was used mainly for its discussion on the subject of interactivity and not on virtual reality per se.

Chartier, R. (1995) *Forms and meanings.* Pennsylvania, US: University of Pennsylvania Press.

Coover, R. (1992) 'The end of books', *New York Times Book Review*, 1, pp. 23-24.

Eisenstein, E. (1979) *The printing press as an agent of change: Communications and cultural transformation in early-modern Europe.* Vol. 1. Cambridge: Cambridge University Press.

Finkelstein, D. & McCleery, A. (eds.) (2002) *The book history reader.* London: Routledge.

Kernan, A. (1987) *Printing technology, letters and Samuel Johnson.* Princeton: Princeton University Press.

Kilgour, F. G. (1998) *The evolution of the book.* Oxford: Oxford University Press.

Ong, W. J. (1982) *Orality and literacy: The technologizing of the word.* London: Methuen Press.

1.2 General History and Principles

Baudin, F. (1993) 'Lessons to be learned from the history of typography', in Sassoon, R. (ed.) *Computers and typography.* Intellect Books, pp. 102-129.

Coulmas, F. (1999) *The Blackwell encyclopaedia of writing systems.* Oxford: Blackwell Publishing.

Gray, N. (1976) *Nineteenth century ornamented typefaces.* 2nd edn. London: Faber & Faber.

Gray, N. (1996) *A history of lettering.* London: Phaidon.

Morrison, S. (1951) *First principles of typography.* 2nd edn. Cambridge: Cambridge University Press.

Moxon, J. (1683) *Mechanick exercises: Or, the doctrine of handy-works: Applied to the art of printing.* The second volumne [sic]. London: Printed for Joseph Moxon on the west-side of Fleet-ditch, at the sign of Atlas.

Nesbitt, A. (1957) *The history and technique of lettering.* New York; London: Dover Publications; Constable and Company.

Roger, B. (1943) *Paragraphs on printing.* (Facsimile edition by Dover Publications 1979) edn. New York: William E. Rudge's Sons.

Ruder, E. (1967) *Typographie: Ein gestaltungslehrbuch. Typography: A manual of design.* Teufen: Niggli.

Spencer, H. (1969) *Pioneers of modern typography.* London: Lund Humphries.

Spiekermann, E. & Ginger, E. M. (1993) *Stop stealing sheep & find out how type works.* Mountain View, Calif.: Adobe Press.

Spiekermann, E. (1990) *Typomania.* BBC 2, Unknown transmission date.

Updike, D. B. (1937) *Printing types: Their history, forms, and use.* London: Oxford University Press.

1.3 Typographic Textbooks and Manuals

Baines, P. & Haslam, A. (2002) *Type & typography.* London: Laurence King.

Bringhurst, R. (1997) *The elements of typographic style.* 2nd edn. Vancouver: Hartley and Marks.

Jury, D. (2002) *About face: Reviving the rules of typography.* Switzerland: RotoVision.

Kane, J. (2002) *A type primer.* London: Laurence King.

McLean, R. (1980) *The Thames and Hudson manual of typography.* London: Thames and Hudson Ltd.

Tschichold, J. (1928) *Die neue typographie.* Facsimile edn. Berlin: Bildungsverband der Deutschen Buchdrucker.

Tschichold, J., Bringhurst, R. & Hadeler, H. (eds.) (1991) *The form of the book: Essays on the morality of good design.* London: Lund Humphries.

1.4 Typographic Theory

Apollinaire, G., Greet, A. H. & Lockerbie, S. I. (1980) *Calligrammes: Poems of peace and war (1913-1916).* Berkeley; London: University of California Press.

Dixon, C. (2001) *A descriptive framework for typeforms: An applied study.* Unpublished PhD thesis. Open University.

Drucker, J. (1994) *The visible word: Experimental typography and modern art, 1909-1923.* Chicago: University of Chicago Press.

Drucker, J. (2004) 'What is a letter?' in Heller, S. (ed.) *The education of a typographer.* New York: Allworth Press, pp. 78-90.

Gill, E. (1936) *An essay on typography.* 2nd edn. London: Sheed and Ward.

Kinross, R. (1992) *Modern typography: An essay in critical history.* London: Hyphen Press.

Helfand, J. (2001) *Screen.* New York: Princeton Architectural Press.

Heller, S. & Meggs, P. B. (eds.) (2001) *Text on type: Critical writings on typography.* New York: Allworth Press.

Lupton, E. (2000) 'Fluid mechanics: Typographic design now', in Albrecht, D., Lupton, E. and Holt, S. S. (eds.) *Design culture now: National design triennial.* New York: Princeton Architectural Press and Cooper Hewitt, National Design Museum, pp. unpaged.

Waller, R. (1988) *The typographic contribution to language: Towards a model of typographic genres and their underlying structures.* Unpublished PhD thesis. University of Reading.

Waller, R. (1996) 'Typography and discourse', in Barr, R., Kamil, M. L., Mosenthal, P. B. and Pearson, P. D. (eds.) *Handbook of reading research.* Vol. 2. New Jersey: Lawrence Erlbaum Associates, pp. 341-380.

1.5 Typographic Education

Heller, S. (1995) *Fashion follows function.* London: Batsford.

Jury, D. (2001) 'J H Mason, typography, and the art school ethos', in Jury, D. (ed.) *Typographic writing.* London: International Society of Typographic Designers, pp. 227-233.

Jury, D. (2004) 'Convention and creativity in typography', in Heller, S. (ed.) *The education of a typographer.* New York: Allworth Press, pp. 101-107.

McCoy, K. (2003) 'Learning curves: The reticence about teaching typography with computers is a detriment to design students', *PRINT*, 30, pp. 22, 124-125.

Schmidt, M. (2004) 'Concerns for education in today's typographic universe', in Heller, S. (ed.) *The education of a typographer.* New York: Allworth, pp. 55-76.

Shaw, P. (2004) 'Teaching the parameters', in Heller, S. (ed.) *The education of a typographer.* New York: Allworth Press, pp. 10-13.

Swann, C. (1996) 'Typography is too important to be taught to designers', in Jury, D. (ed.) *Typographic writing.* London: ISTD, pp. 266-269.

Swann, C. (1997) 'Typography is too important to be taught to designers', *Curtin School of Design Journal*, 4.

Twyman, M. (2001) 'The working party on typographic teaching: Interim report, October 1968', in Jury, D. (ed.) *Typographic writing.* London: International Society of Typographic Designers, pp. 237-244.

Weingart, W. (1972) 'How can one make swiss typography?' *Octavo*, 87, (4).

1.6 Digital and Screen-based Typography

Aesthetic and Computational Group (1996) *Courses taught by Professor Maeda.* Available at: http://acg.media.mit.edu/courses/ (Accessed: 17 March 2004).

Bellantoni, J. & Woolman, M. (1999) *Type in motion: Innovations in digital graphics.* London: Thames and Hudson.

Bigelow, C. & Day, D. (1983) 'Digital typography', *Scientific American*, 249, (2), pp. 106-119.

Coueignoux, P. J. M. (1975) *Generation of roman printed fonts.* Unpublished PhD thesis. Massachusetts Institute of Technology.

Ford, S., Forlizzi, J. & Ishizaki, S. (1997) 'Kinetic typography: Issues in time-based presentation of text', *CHI97: Conference on Human Factors in Computing Systems.* Los Angeles, April 18-23, New York: ACM Publications, pp. 269-270.

Fry, B. (2004) *Computational information design.* Unpublished PhD thesis. Massachusetts Institute of Technology.

Gill, J., Silver, J., Sharville, C. & O'Donnell, P. (2000a) *Tiresias pcfont.* Massachusetts: Bitstream.

Gill, J., Silver, J., Sharville, C. & O'Donnell, P. (2000b) *Tiresias screenfont.* Massachusetts: Bitstream.

Ishizaki, S. (1998) 'On kinetic typography', *Statements, the newsletter for the American Center for Design*, 12, (1), pp. 7-9.

Kasdorf, W. E. (2003) *The Columbia guide to digital publishing.* Columbia: Columbia University Press.

Lee, J. C., Forlizzi, J. & Hudson, S. E. (2002) 'The kinetic typography engine: An extensible system for animating expressive text', *Letters CHI*, 4, (2), pp. 81-90.

Paley, W. B. (2002b) 'Textarc: Showing word frequency and distribution in text', *IEEE Symposium on Information Visualization (InfoVis02) Poster Compendium.* Wong, P. C. and Andrews, K. (eds.) Los Alamitos, CA, IEEE Press.

Rubenstein, R. (1988) *Digital typography: An introduction to type and composition for computer system design.* Canada: Addison-Wesley.

Small, D. (1987) *Expressive typography: High quality dynamic and responsive typography in the electronic environment.* Masters Thesis. Massachusetts Institute of Technology.

Wagener, A. V. (2005) *The next big thing in online type.* Available at: http://www.poynter.org/column.asp?id=47&aid=78683 (Accessed: 5th October 2005).

Wong, Y. Y. (1995) *Temporal typography: Characterization of time-varying typographic forms.* Masters Thesis. Massachusetts Institute of Technology.

1.7 Legibility and Usability Studies

Bouma, H. (1970) 'Interaction effects in parafoveal letter recognition', *Nature*, 226, pp. 177-178.

Chandler, S. B. (2001) *Comparing the legibility and comprehension of type size, font selection and rendering technology of onscreen type.* Unpublished PhD thesis. Virginia Polytechnic Institute and State University.

Dillon, A. (1992) 'Reading from paper versus screens: A critical review of the empirical literature', *Ergonomics*, 35, pp. 1297-1326.

Dillon, A. (1994) *Designing usable electronic text.* London: Taylor and Francis.

Dyson, M. C. (2004) 'How physical text layout affects reading from screen', *Behaviour and Information Technology*, 23, (6), pp. 377-393.

Dyson, M. C. & Haselgrove, M. (2001) 'The influence of reading speed and line length on the effectiveness of reading from screen', *International Journal of Human-Computer Studies*, 54, pp. 586-612.

Grabinger, R. S. & Amedeo, D. (1988) 'CRT text layout: Perceptions of viewers', *Computers in Human Behaviour*, 4, pp. 189-205.

Javal, E. (1878) 'Hygiène de la lecture', *Buletin de la Société de Médecine Publique*, pp. 569.

Kahn, P. & Lenk, K. (1993) 'Typography for the computer screen: Applying the lessons of print to electronic documents', *The Seybold Report on Desktop Publishing*, 7, pp. 3-16.

Lund, O. (1999) *Knowledge construction in typography: The case of legibility research and the legibility of sans serif typefaces.* Unpublished PhD thesis. University of Reading.

Mills, C. B. & Weldon, L. J. (1987) 'Reading text from computer screens', *ACM Computing Survey*, 19, pp. 329-358.

Muter, P. & Maurutto, P. (1991) 'Reading and skimming from computer screens: The paperless office revisited', *Behaviour and Information Technology*, 10, (4), pp. 257-266.

Muter, P. (1996) 'Interface design and optimization of reading of continuous text', in van Oostendorp, H. and de Mul, S. (eds.) *Cognitive aspects of electronic text processing.* Norwood, New Jersey: Ablex, pp. 161-180.

O'Hara, K. & Sellen, A. (1997) 'A comparison of reading paper and on-line document', *CHI 97: Human factors in computing systems.* Pemberton, S. (ed.) Atlanta, Geogia, ACM/Addison-Wesley.

Spencer, H. (1968) *The visible word.* London: Lund Humphries.

Tinker, M. A. (1963) *Legibility of print.* Iowa: Iowa State University Press.

Tinker, M. A. (1968) *Bases for effective reading.* Minneapolis: Lund Press.

Wiessenmiller, E. M. (1999) *A study of the readability of on-screen text.* Unpublished PhD thesis. Virginia Polytechnic Institute and State University.

Zachrisson, B. (1965) *Studies in the legibility of printed text.* Stockholm: Almqvist and Wiksell.

1.8 Technology

Cleveland, P. (2003) 'Bound to technology--the telltale signs in print', *Design Studies*, 25, (2), pp. 113-153.

Daines, M. (1993) 'Some aspects of the effects of technology on type design', in *Computers and typography.* Intellect Books, pp. 76-84.

Staples, L. (2000) 'Typography and the screen: A technical chronology of digital typography, 1984-1997', *Design Issues*, 16, (3), pp. 19-34.

1.9 Examples of Screen-based Typography

Aesthetic and Computational Group (1996) *Valence.* Available at: http://acg.media.mit.edu/people/fry/valence/ (Accessed: 14 April 2006).

Beaufonts (2001) *Chinese whispers.* Available at: http://www.beaufonts.com/pssst (Accessed: 22 December 2003).

Choi, B. (2001) *Nomad typeface.* Available at: http://www.typophile.com/cgibin/show.pl?29/381.html (Accessed: 9 March 2005).

Fry, B. (1999) *Valence.* Ver. 1 [Online Application] Massachussets: Massachussetts Institute of Technology.

Gattaca (1997) Directed by Niccol, A. [Film]. United States: Columbia Pictures.

Levin, G., Feinberg, J. & Curtis, C. (2002) *Alphabet synthesis machine.* Available at: http://alphabet.tmema.org (Accessed: 9 March 2005).

Lieberman, Z. (2001) *Intersection.* Available at: http://www.thesystemis.com/intersection (Accessed: 9 March 2005).

North by northwest (1959) Directed by Hitchcock, A. [Film]. United States: Metro Goldwyn Mayer.

Paley, W. B. (2002a) *Textarc.* Ver. 1 [Online Application] TextArc.

Psycho (1960) Directed by Hitchcock, A. [Film]. United States: Paramount Pictures.

Seven (1995) Directed by Fincher, D. [Film]. United States: New Line Cinema.

Small, D. (2000) *Talmud project.* [Interactive display]. New York: Cooper-Hewitt.

The island of Dr. Moreau (1996) Directed by Frankenheimer, J. [Film]. United States: New Line Cinema.

Thinkmap (1998) *Visual thesarus.* Available at: http://www.visualthesarus.com (Accessed: 9 March 2005).

Utterback, C. & Achituv, R. (1999) *Text rain.* [Interactive installation]. San Francisco, CA: New Langton Arts Gallery.

2.0 Design

This section lists works written about the discipline of design. It ranges from general discussions relating to the development of the discipline, to more specific discussions relating to design education and professional practice. The 'Design Research, Methods and Theories' section provides an overview on the development of design research. Included are works charting the debate surrounding the emergence of design as a distinct discipline (Cross 2000) from one that was dominated by a scientific paradigm (Simon, 1969). Earlier studies focused on describing design methods, while recent studies focus on understanding the creative and intuitive aspects of designing. The 'Design Knowledge and Learning' section contains works that investigate how design skills are learnt and applied. Tacit knowledge is also explored through works by Polanyi (1966) and Nonaka and Takeuchi (1995). The 'Design Education' section contains two seminal works (Bell, 1963 and Macdonald, 1970) on the origins of British design education, as well as works discussing the future of design education. Section 2.4 lists examples of design guidelines developed for a range of design practices, and was used by this study to evaluate advantages and disadvantages of guidelines.

2.1 Design Research, Methods and Theories

Allison research index of art and design (1992) [CD-ROM]. Allison, Brian. Available: ARIAD Associates.

Archer, B. (1979) 'Whatever became of design methodology?' *Design Studies*, 1, (1), pp. 17-18.

Archer, B. (1995) 'The nature of research', *Co-Design Journal*, 02, (01.02.03), pp. 6-13.

Bird, E. (2000) 'Research in art and design: The first decade', *Research into Practice*. Vol. 1. Hertfordshire, University of Hertfordshire, unpaged.

Broadbent, G. (1979) 'Design and theory building', *Design Methods and Theories*, 13, (3/4), pp. 103-107.

Coyne, R. M. & Snodgrass, A. (1991) 'Is designing mysterious? Challenging the dual knowledge thesis', *Design Studies*, 12, (3), pp. 124-131.

Coyne, R. M. & Snodgrass, A. (1993) 'Rescuing CAD from rationalism.' *Design Studies*, 14, (2), pp. 100-123.

Cross, N. (1984) *Developments in design methodology*. Chichester: Wiley.

Cross, N. (1997) 'Descriptive models of creative design: Application to an example', *Design Studies*, 18, (4), pp. 427-455.

Cross, N. (2000) 'Design as a discipline', *Doctoral Education in Design: Foundations for the Future*. Vol. 1. Durling, D. and Friedman, K. (eds.) La Clusaz, France, Staffordshire University Press, pp. 93-100.

Daley, J. (1982) 'Design creativity and the understanding of objects', *Design Studies*, 3, (3), pp. 133-137.

Darke, J. (1984) 'The primary generator and the design process', in Cross, N. (ed.) *Developments in design methodology*. Chichester: John Wiley and Son, pp. 175-188.

Davies Cooper, R. (1995) 'Setting a research framework', *Co-Design Journal*, 01, (02), pp. 14-21.

Dilnot, C. (1982) 'Design as a socially significant activity: An introduction', *Design Studies*, 3, (3), pp. 139-146.

Eastman, C. M. (1970) 'On the analysis of intuitive design processes', in Moore, G. T. (ed.) *Emerging methods in environmental design and planning*. Cambridge, Mass: MIT Press, pp. 21-37.

Emmitt, S. (2002) *Architectural technology*. Oxford: Blackwell Publishing.

Fisher, T. (1997) 'The designer's self-identity - myths of creativity and the management of teams', *Creativity and Innovation Management*, 6, (1).

Frayling, C. (1993) 'Research in art and design', *RCA Research Papers*, 1, (1).

Gray, C. & Malins, J. (1993) 'Research procedures/methodology for artist and designers', *The European Postgraduate Art and Design Group*. Winchester, Winchester School of Art.

Gregory, S. A. (1966) *The design method*. London: Butterworth.

Holness, A. (2000) *The analysis of design methods by a comparative study of award-winning industrial architecture since 1970*. Unpublished PhD thesis. Northumbria University.

Holt, J. E., Radcliffe, D. F. & Schoorl, D. (1985) 'Design or problem solving - a critical choice for the engineering profession', *Design Studies*, 6, (2), pp. 107-110.

Jones, J. C. (1992) *Design methods.* 2nd edn. New York; London: Van Nostrand Reinhold: Chapman & Hall.

Krauss, R. I., Myers, J. R., Danielson, S. & Lewis, R. (1970) 'Design: A case history', in Moore, G. T. (ed.) *Emerging methods in environmental design and planning.* Massachusetts: MIT Press, pp. 11-20.

Kyffin, S. (2003) 'The question of design', in Aarts, E. and Marzano, S. (eds.) *The new everyday. Views on ambient intelligence.* Amsterdam: BIS, pp. 250-255.

Lawson, B. (1990) *How designers think: The design process demystified.* 2nd edn. Oxford: Butterworth Architecture.

Love, T. (1995) 'Systems models and engineering design theory', in Hutchinson, W., Metcalf, S., Standing, C. and Williams, M. (eds.) *Systems for the future.* Perth Western Australia: Edith Cowan University, pp. 238-246.

Love, T. (2000) 'A meta-theoretical basis for design theory', *Doctoral Education in Design: Foundations for the Future.* Vol. 1. Durling, D. and Friedman, K. (eds.) La Clusaz, France, Staffordshire University Press, pp. 45-54.

Magee, K. (1987) 'The elicitation of knowledge from designers', *Design Studies*, 8, no 2, pp. 62-69.

Mitchell, T. (1993) *Redefining designing: From form to experience.* New York: Van Nostrand Reinhold.

Olaisen, J. & Friedman, K. (2000) 'Toward a philosophy of science for design research', *Doctoral Education in Design: Foundations for the Future.* Vol. 1. Durling, D. and Friedman, K. (eds.) La Clusaq, France, Staffordshire University Press, pp. 101-108.

Rittel, H. & Webber, M. (1984) 'Planning problems are wicked problems', in Cross, N. (ed.) *Developments in design methodology.* Chichester: Wiley, pp. 317-330.

Simon, H. (1969) *The sciences of the artificial.* Cambridge, Mass: MIT Press.

Tonkinwise, C. (2004) 'The idealist practice of reflection: Typologies, techniques and ideologies for design researchers', *Futureground: Design Research Society Conference.* Vol. 2. Redmond, J., Durling, D. and de Bono, A. (eds.) Melbourne, Australia, Monash University, Faculty of Art & Design, pp. 220-233.

Warburton, N. (2001) *The impact of three dimensional digital modelling media on the modes of communication used by industrial designers.* Unpublished PhD thesis. Northumbria University.

Whatmore, J. (1996) 'A creative credo', *Demos Quarterly*, (8), pp. 42-43.

Wright, E. (2004) 'Designing for an ageing population: An inclusive design methodology', *Art, Design & Communication in Higher Education*, 2, (3), pp. 155-165.

2.2 Design Knowledge and Learning

Ahmed, S., Wallace, K. M. & Blessing, L. (2003) 'Understanding the differences between how novice and experienced designers approach design tasks', *Research in Engineering Design*, 14, pp. 1-11.

Atman, C. J., Chimka, J., Bursic, K. M. & Nachtmann, H. M. (1999) 'A comparison of freshman and senior engineering design processes', *Design Studies*, 20, pp. 131-152.

Casakin, H. & Goldschmidt, G. (1999) 'Expertise and the use of visual analogy: Implications for design education', *Design Studies*, 20, (2), pp. 153-175.

Chi, M. T. H., Glaser, R. & Rees, E. (1982) 'Expertise in problem solving', in Sternberg, J. (ed.) *Advances in the psychology of human intelligence.* Hillsdale: Lawrence Erlbaum Associates, pp. 7-75.

Cross, N. (2001) 'Design cognition: Results from protocol and other empirical studies of design activities', in Eastman, C., McCracken, W. M. and Newstetter, W. (eds.) *Design knowing and learning: Cognition in design education.* Oxford: Elsevier Science, pp. 79-103.

Cross, N. (2003) 'The expertise of exceptional designers', *Expertise in Design: Design Thinking Research Symposium 6.* Cross, N. and Edmonds, E. (eds.) University of Technology, Sydney, Australia, 17-19 November 2003.

Cross, N. (2004) 'Expertise in design: An overview', *Design Studies*, 25, (5), pp. 427-441.

Cross, N., Christiaans, H. & Dorst, K. (1994) 'Design expertise amongst student designers', *Journal of Art and Design Education*, 13, pp. 39-56.

Dorst, K. & Cross, N. (2001) 'Creativity in the design process: Co-evolution of problem-solution', *Design Studies*, 22, pp. 425-437.

Dorst, K. (2004) 'Investigating the nature of design thinking', *Futureground: Design Research Society Conference.* Vol. 2. Redmond, J., Durling, D. and De Bono, A. (eds.) Melbourne, Australia, Monash University, Faculty of Art & Design, pp. 72-81.

Dreyfuss, H. L. (2002) 'Intelligence without representation - Merleau-Ponty's critique of mental representation', *Phenomenology and the Cognitive Sciences*, 1, pp. 367-383.

Dreyfuss, H. L. (2003a). *Can there be a better source of meaning than everyday practices?* [Unpublished lecture notes of the second 2003 Spinoza Lecture].

Dreyfuss, H. L. (2003b). *From Socrates to artificial intelligence: The limits of rule-based rationality.* [Unpublished lecture notes from the first Spinoza Lecture].

Durling, D., Cross, N. & Johnson, J. (1996) 'Personality and learning preferences of students in design and design-related disciplines', *IDATER 96 International Conference on Design and Technology*, Loughborough University.

Ericsson, K. A. & Smith, J. (eds.) (1991) *Toward a general theory of expertise: Prospects and limits.* Cambridge: Cambridge University Press.

Etalåpelto, A. (2000) 'Contextual and strategic knowledge in the acquisition of design expertise', *Learning and Instruction*, 10, pp. 113-136.

Hillier, B., Musgrove, J. & O'Sullivan, P. (1972) 'Knowledge and design', in Mitchell, W. J. (ed.) *Environmental design: Research and practice.* Vol. 2. Los Angeles: University of California, pp. 29.3.1-29.3.9.

Hillier, B., Musgrove, J. & O'Sullivan, P. (1984) 'Knowledge and design', in Cross, N. (ed.) *Developments in design methodology.* Chichester: John Wiley & Son, pp. 245-264.

Kolb, D. A. (1984) *Experiential learning: Experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice Hall.

Lawson, B. (2004) 'Schemata, gambits and precedent: Some factors in design expertise', *Design Studies*, 25, (5), pp. 443-457.

Lowry, I. S. (1965) 'A short course in model design', *American Institute of Planners Journal*, (May), pp. 158-166.

Mockford, C. (1996) 'The evaluation of different styles of teaching and learning in the context of design and technology education', *IDATER 96 International Conference on Design and Technology.* Loughborough University, Loughborough University.

Newstetter, W. & McCracken, W. M. (2001) 'Novice conceptions of design: Implications for the design of learning environments', in Eastman, C., McCracken, W. M. and Newstetter, W. (eds.) *Design knowing and learning: Cognition in design education.* Oxford: Elsevier, pp. 63-78.

Nickols, F. W. (2000) 'The knowledge in knowledge management', in Cortada, J. W. and Woods, J. A. (eds.) *The knowledge management yearbook 2000-2001.* Boston, MA: Butterworth-Heinemann, pp. 12-21.

Nonaka, I. & Takeuchi, H. (1995) *The knowledge-creating company.* New York: Oxford University Press.

Norman, D. A. & Rumelhart, D. E. (1978) 'Accretion, tuning, and restructuring: Three modes of learning', in Cotton, J. W. and Klutzky, R. L. (eds.) *Semantics factors in cognition.* New York: Erlbaum, pp. 37-53.

Oxman, R. (2003) 'Think-maps: Teaching design thinking in design education', *Design Studies*, 25, (1), pp. 63-91.

Polanyi, M. (1966) *The tacit dimension.* London: Routledge & Kegan Paul.

Popovic, V. (2003) 'General strategic knowledge models connections and expertise development in product design', *Expertise in Design: Design Thinking Research Symposium 6.* Cross, N. and Edmonds, E. (eds.) University of Technology, Sydney, Australia, 17-19 November 2003.

Popovic, V. (2004) 'Expertise development in product design--strategic and domain-specific knowledge connections', *Design Studies*, 25, (5), pp. 527-545.

Uluoglu, B. (2000) 'Design knowledge communicated in studio critiques', *Design Studies*, 21, (1), pp. 33-58.

Vosniadou, S. & Ortony, A. (1989) 'Similarity and analogical reasoning: A synthesis.' in Vosniadou, S. and Ortony, A. (eds.) *Similarity and analogical reasoning.* Cambridge: Cambridge University Press, pp. 1-17.

2.3 Design Education

Bell, Q. (1963) *The schools of design.* London: Routledge & Kegan Paul.

Boyarski, D. (1998) 'Designing design education', *ACM SIGCHI Bulletin*, 30, (3), pp. 7-10.

Findeli, A. (2001) 'Rethinking design education for the 21st century: Theoretical, methodological, and ethical discussion', *Design Issues*, 17, (1), pp. 5-17.

Friedman, K. (1997) *Design science and design education.* Sandvika, Norway: Norwegian School of Management, School of Marketing.

Macdonald, S. (1970) *The history and philosophy of art education.* London: University of London Press.

Wingler Hans, M., Gilbert, B., Jabs, W. & Stein, J. (1969) *The Bauhaus-Weimar, Dessau, Berlin, Chicago.* (translated by Wolfgang Jabs and Basil Gilbert. Edited by Joseph Stein. Second printing.). M.I.T. Press: Cambridge, Mass., London.

2.4 Design Guidelines

Borchers, J., Deussen, O., Klingert, A. & Knorzer, C. (1996) 'Layout rules for graphical web documents', *Computers and Graphics*, 20, pp. 415-426.

Brown, C. M. L. (1988) *Human-computer interface design guidelines.* Norwood, New Jersey: Ablex.

Burmester, M. & Machate, J. (2003) 'Creative design of interactive products and use of usability guidelines - a contradiction?' in Jacko, J. and Stephanidis, C. (eds.) *Human-computer interaction: Theory and practice (part 1).* Vol. 1. New Jersey: Lawrence Erlbaum Associates, pp. 43-47.

Hartley, J. & Burnhill, P. (1977) 'Fifty guide-lines for improving instructional text', *Programmed Learning and Educational Technology*, 14, pp. 65-73.

Hartley, J. (1981) 'Eighty ways of improving instructional text', *IEEE Transactions on Professional Communication*, 24, pp. 17-27.

Hartley, J. (1982) 'Information mapping: A critique', *Information Design Journal*, 3, pp. 51-58.

Kinross, R. (1979) 'Designing instructional text', *Instructional Science (Historical Archive)*, 8, (3), pp. 275-289.

Koyani, S. J., Bailey, R. W. & Nall, J. R. (2003) *Research-based web design and usability guidelines.* Bethesda, MD: National Institutes of Health; National Cancer Institute.

Lee, S. H. & Boling, E. (1999) 'Screen design guidelines for motivation in interactive multimedia instruction: A survey and framework of designers', *Educational Technology*, 39, pp. 19-26.

Mayhew, D. J. (1992) *Principles and guidelines in software user interface design.* New Jersey: Prentice Hall.

Mosier, J. N. & Smith, S. L. (1986) 'Application guidelines for designing user interface software', *Behaviour and Information Technology*, 5, (1), pp. 39-46.

Stewart, T. & Travis, D. (2002) 'Guidelines, standards and style guides', in Jacko, J. and Sears, A. (eds.) *The human-computer interaction handbook.* Mahwah: L.E.A., pp. 991-1005.

Wright, P. (1985) 'Editing: Policies and processes', in Duffy, T. and Waller, R. (eds.) *Designing usable texts.* Orlando, Florida: Academic Press, pp. 63-96.

2.5 Design History

Fry, T. (1981) 'Design history: A debate', *Block*, 5, pp. 15.

Votolato, G. (1998) *American design in the twentieth century.* Manchester: Manchester University Press.

2.6 Design Practice Debate

Design Museum (2005) '2005 Designer of the Year'. *Design museum.* Available at: http://www.designmuseum.org/digital/index.php?pt=2&id=8&des=66 (Accessed: 17 April 2006).

Heartfield, J. (2005) 'Bureaucrat of the year', *Spiked.* Available at: http://www.spiked-online.com/Articles/0000000CABDA.htm (Accessed: 17 April 2006).

Sudjic, D. (2005) 'Design award row engulfs 'super school'', *The Observer.* June 12. [Online]. Available at: http://observer.guardian.co.uk/uk_news/story/0,6903,1504704,00.html (Accessed: 17 April 2006).

Thackara, J. (2005) 'Authorship and Design'. *Doors of perception weblog.* 14 June. Available at: http://doors8delhi.doorsofperception.com/archives/2005/06/design_council.html (Accessed: 17 April 2006).

3.0 Visual Communication Design

Works in this section relate to the practise and learning of visual communication design. This can be divided into two areas: graphic design, which relates to the design of printed material; and multimedia design (also sometimes known as new media, screen or interactive design), which relates to the design of screen and interactive material. Articles in the 'Design Education' section are fairly recent and provide a snapshot of issues surrounding the future of visual communication design education in light of technological and social changes (see for example Buchanan, 1995; Swanson, 1998 and Boyd-Davis, 2000). Works in the 'Graphic and Multimedia Design' section are mostly made up of design references (such as Shedroff, 2001 and Brink et al, 2002) and monographs (such as Kuitenbrouwer, 2002; Bruinsma, 2003 and Middendorp, 2003) illustrating recent award-winning designs or specially selected examples of innovative print and screen designs.

3.1 General History and Theories

Josephson, S. G. (1996) *From idolatry to advertising.* New York: M.E.Sharpe Inc.

Meggs, P. B. (1998) *A history of graphic design.* 3rd edn. New York: John-Wiley & Sons, Inc.

Poyner, R. (1995) 'Interview with Katherine McCoy', *EYE*, 4, (16), pp. 10-16.

3.2 Graphic and Multimedia Design Education

Boyd-Davis, S. (2000) 'Educating the multimedia designers', in Dudley, E. and Mealing, S. (eds.) *Becoming designers: Education and influence.* Exeter, UK: Intellect, pp. 63-80.

Buchanan, R. (1995) 'The changing culture of communication design', *Charting the future of graphic design education.* Edmonton, GDEA, ICOGRADA.

Margolin, V. (1990) 'Design studies and the graphic designer', *Graphic Design Education Association Symposium.* USA, Graphic Design Education Association.

McCoy, K. (1998) 'Education in an adolescent profession', in Heller, S. (ed.) *The education of a graphic designer.* New York: Allworth Press, pp. 3-12.

Swanson, G. (1998) 'Graphic design education as a liberal art: Design and knowledge in the university and the real world', in Heller, S. (ed.) *The education of a graphic designer.* New York: Allworth Press, pp. 13-24.

3.3 Graphic and Multimedia Design

American Institute of Graphic Arts (2006) *AIGA.* Available at: http://www.aiga.org (Accessed: 12 March 2004).

Brink, T., Gergle, D. & Wood, S. D. (2002) *Usability for the web.* San Francisco: Morgan Kaufmann Publishers.

Kuitenbrouwer, C. (ed.) (2002) *De best verzorgde boeken 2001,* Amsterdam: CPNB/Just Enschede.

MacEachren, A. M. (2001) 'An evolving cognitive-semiotic approach to geographic visualization and knowledge construction', *Information Design Journal,* 10, (1), pp. 26-36.

Martens, K. (1996) *Printed matter/drukwerk.* London: Hyphen Press.

Middendorp, J. (ed.) (2003) *De best verzorgde boeken 2002,* Amsterdam: CPNB/Just Enschede.

Nielsen, J. (2000a) *Designing web simplicity.* Indiana, US: New Riders Publishing.

Nielsen, J. (2000b) *End of web design.* Available at: http://www.useit.com/alertbox/20000723.html (Accessed: 22 September 2003).

Shedroff, N. (1994) *Recipe for a successful website.* Available at: http://www.nathan.com/thoughts/recipe/content.html (Accessed: 22 September 2003).

Shedroff, N. (2001) *Experience design 1.* Indiana, US: New Riders.

Staal, G. (ed.) (2001) *Apples and oranges: Best Dutch graphic design Vol 1.* Amsterdam: BIS.

4.0 New Media

This section lists works related to a field of study that has emerged from the usage of computers as a means to create, store and distribute data. The 'General History and Theories' section provides an overview to the historical development of new media, usually by borrowing from current understanding of existing media in order to develop theories relating to new media (see for example Bolter and Gruisin, 1999, Manovich, 2001, Lister et al, 2003 and Wardrip-Fruin and Montfort, 2003). Other works such as Rheingold (1991), Laurel (1993) and Murray (1997) provide further discussion into specific characteristics of new media. In particular, works relating to Interactivity and Hypertext are located in Sections 4.2, 4.3 and 4.4 respectively. Works in Sections 4.2 and 4.3 present theories relating to Interactivity and Hypertext, while Section 4.4 lists examples of traditional and electronic literature that have made use of hypertext concepts. The final section, 'Media Review' lists works used in this study to support the media review conducted in Chapter 4. Works in this section are a mix of media and technology discussions.

4.1 General History and Theories

Baldwin, T., McVoy, D. & Steinfield, C. (1996) *Convergence, integrating media, information and communication.* Thousand Oaks, Calif.; London: SAGE.

Bolter, J. D. & Grusin, R. (1999) *Remediation: Understanding new media.* Cambridge, Massachusetts: MIT Press.

Brand, S. (1987) *The media lab: Inventing the future at MIT.* New York: Viking Penguin.

Everett, A. (2003) 'Digitextuality and click theory: Theses on convergence media in the digital age', in Everett, A. and Caldwell, J. T. (eds.) *New media: Theories and practices of digitextuality.* New York: Routledge, pp. 3-28.

Holtzman, S. R. (1997) *Digital mosaics: The aesthetics of cyberspace.* New York: Simon & Schuster.

Laurel, B. (1993) *Computers as theatre.* Reading, Massachusetts: Addison-Wesley.

Levinson, P. (1997) *Soft edge: A natural history and future of the information revolution.* London: Routledge.

Lister, M., Dovey, J., Giddings, S., Iain, G. & Kieran, K. (2003) *New media: A critical introduction.* London: Routledge.

Manovich, L. (2001) *The language of new media.* Massachusetts: Massachusetts Institute of Technology.

Murray, J. H. (1997) *Hamlet on the Holodeck: The future of narrative in cyberspace.* New York, NY: The Free Press.

Negroponte, N. (1995) *Being digital.* 1st edn. New York: Knopf.

Rheingold, H. (1991) *Virtual worlds.* London: Secker and Warburg.

Wardrip-Fruin, N. & Montfort, N. (eds.) (2003) *The new media reader.* Cambridge, Mass.; London: MIT.

Weibel, P. (1996) 'The world as interface', in Druckery, T. (ed.) *Electronic culture.* New York: Aperture.

4.2 Interactivity Theories

Iser, W. (1989) 'Interaction between text and reader', in Corner, J. and Hawthorn, J. (eds.) *Communication studies: An introductory reader.* London: Edward Arnold, pp. 160-164.

Jensen, J. F. (1999) 'Interactivity - tracking a new concept in media and communication studies', in Mayer, P. (ed.) *Computer media and communication.* Oxford: Oxford University Press, pp. 160-188.

Rafaeli, S. (1988) 'Interactivity: From new media to communication', in Hawkins, R. P., Wiemann, J. M. and Pingree, S. (eds.) *Sage annual review of communication research: Advancing communication science.* Vol. 16. Beverly Hills, CA.: SAGE, pp. 110-134.

Rhodes, D. M. & Azbell, J. W. (1985) 'Designing interactive video instruction professionally', *Training and Development Journal,* 39, (2), pp. 31-33.

Steuer, J. (1995) 'Defining virtual reality: Dimensions determining telepresence', in Biocca, F. and Levy, M. R. (eds.) *Communication in the age of virtual reality.* Hillsdale, New Jersey: Lawrence Erlbaum Associates, pp. 33-56.

Szuprowicz, B. O. (1995) *Multimedia networking.* New York: McGraw-Hill.

4.3 Hypertext Theories

Aarseth, E. J. (1997) *Cybertext: Perspectives on ergodic literature.* Baltimore, Md.; London: Johns Hopkins University Press.

Bolter, J. D. (1991) *Writing space: The computer, hypertext, and the history of writing.* Hillsdale, N.J.: L. Erlbaum Associates.

Bolter, J. D. (2001) *Writing space: Computers, hypertext and the remediation of print* (2nd ed). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Bush, V. (1945) 'As we may think', In *Atlantic Monthly.* Vol. 176 (1). pp. 101-108.

Landow, G. P. (1992) *Hypertext: The convergence of contemporary critical theory and technology.* Baltimore, US: The John Hopkins University Press.

Landow, G. P. (1997) *Hypertext 2.0.* Baltimore, Md.; London: Johns Hopkins University Press.

Lanham, R. (1994) *The electronic word: Democracy, technology, and the arts.* Chicago and London: University of Chicago Press.

Nielsen, J. (1990) *Hypertext and multimedia.* Boston: Academic Press.

Tapia, A. (2003) 'Graphic design in the digital era: The rhetoric of hypertext', *Design Issues*, 19, (1), pp. 5-24.

4.4 Examples of Hypertext Literature (pre and post digital)

Borges, J. L. (1964) *Labyrinths: Selected stories and other writings.* Harmondsworth: Penguin.

Burroughs, W. & Gysin, B. (1978) *The third man.* New York: Viking.

Calvino, I. (1981) *If on a winter's night a traveller.* London: Secker & Warburg.

Joyce, M. (1987) 'Afternoon: A story'. [CD-ROM]. Available: Eastgate Systems.

Moulthrop, S. (1998) 'Victory garden'. [CD-ROM]. Available: Eastgate Systems.

Perec, G. (1987) *Life a users manual: Fictions.* London: Collins Harvill.

Queneau, R. (1983) *One hundred million poems.* Paris: Kickshaws.

4.5 Media Review

Actinic (2003) *Actinic ecommerce report 2003.* Actinic Software Ltd.

Actinic (2004) *Actinic ecommerce report 2004.* Actinic Software Ltd.

Economist (2003) 'Move over 3g: Here comes 4g', 367, pp. 61-62.

Hermida, A. (2006) *Sony reader targets book lovers.* Available at: http://news.bbc.co.uk/1/hi/technology/4586800.stm (Accessed: 19 January 2006).

Kharif, O. (2002) *Tomorrow's paper-thin screen gems.* Available at: http://www.businessweek.com/technology/content/jun2002/tc20020617_5587.htm (Accessed: 8 September 2003).

Paul, C. (2003) *Digital art.* London: Thames & Hudson.

Rappa, M. (1999) *Business models on the web.* Available at: http://digitalenterprise.org/models/models.html (Accessed: 12 November 2003).

Thomas, K. (1999) *Introduction to 3g.* Available at: http://www.3g.co.uk/All%20About%203G.htm (Accessed: 23 September 2003).

Zakon, R. H. (2005) *Hobbes' Internet timeline v8.1.* Available at: http://www.zakon.org/robert/internet/timeline/ (Accessed: 22 September 2003).

5.0 Communication and Media Studies

Works in this section relate to the field of communication and media studies. They include works that provide an overview of key concepts in communication and media studies (Fiske, 1990 and O'Sullivan et al, 1994), to the history of information and communication technology (Toffler, 1971; 1980; 1983 and Roger, 1986). There are works that discuss specific issues such as the development of the computer as media and its effects on culture and society (MacKenzie and Waicman, 1999; Mayer, 1999; McLuhan and Fiore 1967). Additionally, issues relating to how we interpret and understand meaning are explored through 'multi-literacies theory' (Kress and Leeuwen, 1996; Kress, 2003) and semiotic communication theory (Barthes, 1974).

5.1 General History and Theories

Barthes, R. (1974) *S/Z.* New York: Farrar, Strauss and Giroux.

Eldredge, N. & Gould, S. J. (1972) 'Punctuated equilibria: An alternative to phyletic gradualism', in Schopf, T. J. M. (ed.) *Models of paleobiology.* San Francisco: Freeman, Cooper, pp. 82-115.

Fiske, J. (1990) *Introduction to communication studies.* London: Routledge.

Kress, G. R. & Leeuwen, T. V. (1996) *Reading images - the grammar of visual design.* New York: Routledge.

Kress, G. R. (2003) *Literacy in the new media age.* London: Routledge.

MacKenzie, D. A. & Wajcman, J. (1999) *The social shaping of technology.* 2nd edn. Buckingham: Open University Press.

Mayer, P. (1999) *Computer media and communication: A reader.* Oxford: Oxford University Press.

McLuhan, M. & Fiore, Q. (1967) *The medium is the massage.* Harmondsworth: Penguin.

McLuhan, M. (1964) *Understanding media: The extensions of man.* 1st edn. New York; London: McGraw-Hill.

O'Sullivan, T., Hartley, J., Saunders, D., Montgomery, M. & Fiske, J. (1994) *Key concepts in communication and cultural studies.* 2nd edn. London: Routledge.

Preston, P. (2001) *Reshaping communications.* Thousand Oaks, Calif.; London: SAGE.

Rogers, E. (1986) *Communication technology: The new media in society.* New York: Free Press.

Toffler, A. (1971) *Future shock.* New York: Bantam Books.

Toffler, A. (1980) *The third wave.* London: Collins.

Toffler, A. (1983) *Previews & premises.* Montreal: Black Rose Books.

6.0 Research Methodology

This section deals with works written about different research traditions and methods. The 'Research Traditions' section contains works that discuss the epistemological and ontological foundation of knowledge, with an emphasis on social research. The Action Research tradition and Reflective Practice methods are given more emphasis due to their importance to this study (see for example McKernan, 1996 and Greenwood and Levin, 1998 for Action Research; and Schon, 1983; 1987 for Reflective Practice). This section provides a comprehensive list of literature relating to the history, development and application of Action Research (such as Lewin, 1946; Carr and Kemmis, 1986 and McNiff, 1988). The 'Research Methods' section is divided into several sub-sections – Section 6.3.1 contains works that provide guidance on general issues relating to research design while Sections 6.3.2 to 6.3.7 list specific data collection methods that have been used in this study. The final section, 'Data Analysis' is divided into two sub-sections: quantitative and qualitative methods. These works reflect the methods chosen to analyse the different types of data that were collected in this study. In particular, two main methods used in the study of qualitative data are Grounded Theory (Glaser, 1992) and Data Matrix Display (Miles and Huberman, 1999).

6.1 Research Traditions

Capra, F. (1983) *The turning point: Science, society and the rising culture.* London: Flamingo.

Feyerabend, P. (1975) *Against method.* London: Verso.

Kuhn, T. S. (1962) *The structure of scientific revolutions.* Chicago: University of Chicago Press.

Mahoney, M. J. (1990) *Human change processes: The scientific foundations of psychotherapy.* New York: Basic Books.

Popper, K. R. S. (1959) *The logic of scientific discovery.* New York: Basic Books.

Ravetz, J. (1996) *Scientific knowledge and its social problems.* New Brunswick, New Jersey: Transaction Publishers.

6.2 Action Research and Reflective Practice

Argyris, C., Putnam, R. & Smith, D. M. (1985) *Action science.* San Francisco: Jossey Bass.

Branigan, E. (2003) 'But how can you prove it? Issues of rigour in action research', *Journal of the HEIA*, 10, (3), pp. 37-38.

Carr, W. & Kemmis, S. (1986) *Becoming critical: Education, knowledge and action research.* Lewes, Sussex: Falmer Press.

Checkland, P. B. (1991) 'From framework through experience to learning: The essential nature of action research', in Nissen, H.-E., Klein, H. K. and Hirschheim, R. (eds.) *Information systems research: Contemporary approaches and emergent traditions.* Amsterdam: Elsevier, pp. 397-403.

Checkland, P. B. (1995) *Systems thinking, systems practice.* Chichester, UK: Wiley.

Coghlan, D. & Brannick, T. (2001) *Doing action research in your own organization.* London: SAGE.

Dick, B. (1993) *You want to do an action research thesis?* Available at: http://www.scu.edu.au/schools/gcm/ar/art/arthesis.html (Accessed: 30 September 2005).

Dick, B. (2002) 'Postgraduate programs using action research', *Learning Organization - an International Journal*, 9, (4), pp. 159-171.

Dick, B., Passfield, R. & Wildman, P. (1995) 'Action research for beginners', *ARCS Newsletter*, 3, (1), pp. 3-6.

Dixon, C. (2005). *Finding a way through it all: Completing a practice-based PhD at CSM, 1994-2003.* [Talk]. 22 March.

Elliott, J. & Adelman, C. (1976) *Innovation at the classroom level: The Ford teaching project.* Course CE023. Milton Keynes: Open University.

Elliott, J. (1978) 'Classroom accountability and the self-monitoring teacher', in Harlen, W. (ed.) *Evaluation and the teacher's role.* Basingstoke: Macmillan Education, pp. 47-90.

Greenwood, D. J. & Levin, M. (1998) *Introduction to action research: Social research for social change.* Thousand Oaks, Calif.; London: SAGE.

Grundy, S. (1987) *Curriculum: Product or praxis.* London: Falmer Press.

Hall, S. (1996) 'Reflexivity in emancipatory action research: Illustrating the researcher's constitutiveness', in Zuber-Skerritt, O. (ed.) *New directions in action research.* London: Falmer, pp. 28-49.

Kelly, G. A. (1995) *The psychology of personal constructs.* Vol. 1 and 2. New York: Norton.

Kemmis, S. & McTaggart, R. (1988) *The action research planner.* 3rd edn. Geelong, Victoria: Deakin University Press.

Lewin, K. (1946) 'Action research and minority problems', *Journal of Social Issues*, 2.

McKernan, J. (1996) *Curriculum action research: A handbook of methods and resources for the reflective practitioner.* 2nd edn. London: Kogan Page.

McNiff, J. (1988) *Action research: Principles and practice.* Basingstoke: Macmillan Education.

McTaggart, R. (1997) *Participatory action research: How to do research inside and outside classrooms.* [Seminar]. 30 June.

Melrose, M., J. (2001) 'Maximizing the rigour of action research: Why would you want to? How could you?' *Field Methods*, 13, (2), pp. 160-180.

Noffke, S. (1997) 'Professional, personal, and political dimensions of action research', *Review of Research in Education*, 22, pp. 305-343.

Rapoport, R. (1970) 'Three dilemmas in action research', *Human relations*, 23, (6), pp. 499.

Rearick, M. L. & Feldman, A. (1999) 'Orientations, purposes and reflection: A framework for understanding action research', *Teaching and Teacher Education*, 15, (4), pp. 333-349.

Revans, R. W. (1982) *The origins and growth of action learning.* Bromley: Chartwell-Bratt.

Revans, R. W. (1991) 'Reg revans speaks about action learning'. *Action Learning and Action Research*, [CD-ROM]. Available: TV Centre, University of Queensland.

Schön, D. A. (1983) *The reflective practitioner.* London: Temple-Smith.

Schön, D. A. (1987) *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions.* San Francisco; London: Jossey-Bass.

Schwab, J. J. (1969) 'The practical: A language for curriculum', *The School Review*, 78, (19), pp. 1-23.

Takona, J. P. (2002) *Educational research: Principles and practice.* Lincoln, NE: iUniverse.

Webb, G. (1996) 'Becoming critical of action research for development', in Zuber-Skerritt, O. (ed.) *New directions in action research.* London: Falmer, pp. 13-27.

Winter, R. (1996) 'Some principles and procedures for the conduct of action research', in Zuber-Skerritt, O. (ed.) *New directions in action research.* London: Falmer, pp. 13-27.

Zuber-Skerritt, O. (1992) *Professional development in higher education - a theoretical framework for action research.* London: Kogan Page.

6.3 Research Methods

6.3.1 General Guides

Alreck, P. L. & Settle, R. B. (1995) *The survey research handbook: Guidelines and strategies for conducting a survey.* 2nd edn. New York: McGraw-Hill.

Bell, J. (1993) *Doing your research project: A guide for first-time researchers in education and social science.* Buckingham: Open University Press.

Bernard, H. R. (2000) *Social research methods: Qualitative and quantitative approaches.* Thousand Oaks, Calif.: SAGE.

Black, T. R. (1999) *Doing quantitative research in the social sciences: An integrated approach to research design.* Thousand Oaks, Calif.; London: SAGE.

Cohen, L. & Manion, L. (1989) *Research methods in education.* 3rd edn. London: Routledge.

De Vaus, D. A. (2001) *Research design in social research.* London: SAGE.

Ferman, G. S. & Levin, J. (1975) *Social science research: A handbook for students.* Cambridge, Mass.: Schenkman; New York; London: [Distributed by] Wiley.

Greenfield, T. (2002) *Research methods for postgraduates.* 2nd edn. London: Arnold.

Hall, D. J. & Hall, I. M. (1996) *Practical social research: Project work in the community.* Basingstoke: Macmillan.

Hart, C. (1998) *Doing a literature review: Releasing the social science research.* London: SAGE.

Manstead, A. S. R. & Semin, G. R. (1988) 'Methodology in social psychology: Turning ideas into action', in Hewstone, M., Stoebe, W., Codol, J.-P. and Stepheson, G. M. (eds.) *Introduction to social psychology.* Oxford: Blackwell, pp. 80.

Mason, J. (2002) *Qualitative researching.* 2nd edn. London: SAGE.

May, T. (2001) *Social research: Issues, methods and process.* 3rd edn. Buckingham: Open University Press.

Reich, Y. (1994) 'Annotated bibliography on research methodologies', *Artificial Intelligence for Engineering Design, Analysis and Manufacturing*, 8, pp. 335-366.

Robson, C. (2002) Real world research: A resource for social scientists and practitioner-researchers. 2nd edn. Oxford, UK; Madden, Mass.: Blackwell Publishers.

Rose, D. & Sullivan, O. (1996) *Introducing data analysis for social scientists.* 2nd edn. Buckingham: Open University Press.

Rudestram, K. E. & Newton, R. R. (2001) *Surviving your dissertation.* Thousand Oaks, California: SAGE.

Sekaran, U. (1992) *Research methods for business: A skill-building approach.* 2nd edn. New Jersey: Wiley.

Tashakkori, A., Teddlie, C. & Teddlle, C. (1998) *Mixed methodology.* Thousand Oaks, California: SAGE.

Edwards, J. E., Rosenfeld, P., Booth-Kewley, S. & Thomas, M. D. (1997) *How to conduct organizational surveys: A step-by-step guide.* Thousand Oaks, California: SAGE.

6.3.2 Questionnaire Survey

Couper, M., Blair, J. & Triplett, T. (1999) 'A comparison of mail and e-mail for a survey of employees in US statistical agencies', *Journal of Official Statistics*, 15, (1), pp. 39-56.

Field, A. & Hole, G. J. (2003) *How to design and report experiments.* London: SAGE.

Oppenheim, A. N. (1992) *Questionnaire design, interviewing and attitude measurement.* 2nd edn.: Pinter Publishers.

6.3.3 Interview Survey

Brenner, M., Brown, J. & Canter, D. V. (eds.) (1985) *The research interview: Uses and approaches,* London: Academic Press.

Fontana, A. & Frey, J. H. (1994) 'Interviewing: The art of science', in Denzin, N. and Lincoln, Y. (eds.) *Handbook of qualitative research.* London: SAGE, pp. 361-376.

Knight, P. T. & Arksey, H. (1999) *Interviewing for social scientists: An introductory resource with examples.* Thousand Oaks, Calif.; London: SAGE.

Seidman, I. (1993) *Interviewing as qualitative research.* Columbia: Columbia University, Teacher's College.

6.3.4 Comparative Method

Mahoney, J. (2000) 'Rational choice theory and the comparative method: An emerging synthesis?' *Studies in Comparative International Development*, Summer, pp. 83-94.

Nettl, B. (1983) *Study of ethnomusicology.* Illinois: University of Illinois Press.

Øyen, E. (1990) *Comparative methodology: Theory and practice in international social research.* London ; Newbury Park, Calif.: SAGE.

Ünsal, H. T. (2000) *A comparison of the consumer product development process between Turkey and Western Europe.* Unpublished PhD thesis. Northumbria University.

6.3.5 Observational Methods

Gold, R. (1958) 'Roles in sociological field observations', *Social Forces*, 36, pp. 217-223.

Spradley James, P. (1980) *Participant observation.* New York: Holt, Rinehart and Winston.

6.3.6 Focus Group

Krueger, R. A. & Casey, M. A. (2000) *Focus groups: A practical guide for applied research.* 3rd edn. Thousand Oaks, Calif.; London: SAGE.

Krueger, R. A. (1998) *Analyzing & reporting focus group results.* Thousand Oaks, Calif.; London: SAGE.

Langford, J. & McDonagh, D. (2003) *Focus groups: Supporting effective production development.* London: Taylor & Francis.

Morgan, D. L. (1997) *Focus groups as qualitative research.* 2nd edn. Thousand Oaks; London: SAGE.

Stewart, D. W. & Shamdasani, P. N. (1990) *Focus groups: Theory and practice.* Newbury Park, Calif.; London: SAGE.

6.3.7 Online Research and Data Collection

Colomb, G. & Simutis, J. (1996) 'Visible conversation and academic enquiry', in Herring, S. (ed.) *Computer-mediated communication: Linguistic, social and cross-cultural perspectives.* Amsterdam: John Benjamins Publishing, pp. 203-204.

Galegher, J., Sproull, L. & Kiesler, S. (1998) 'Legitimacy, authority, and community in electronic support groups', *Written Communication*, 15, pp. 493-530.

Gunter, B., Nicholas, D., Huntington, P. & Williams, P. (2002) 'Online versus offline research: Implications for evaluating digital media', *Aslib Proceedings*, 54, (4), pp. 229-239.

Hewson, C., Laurent, D. & Vogel, C. (1996) 'Proper methodologies for psychological and sociological studies conducted via the Internet', *Behaviour Research Methods, Instruments and Computers*, 28, (2), pp. 186-191.

Kiesler, S., Siegel, J. & McGuire, T. (1984) 'Social psychological aspects of computer-mediated communication', *American Psychologist*, 39, pp. 1123-1134.

Mann, C. & Stewart, F. (2000) *Internet communication and qualitative research: A handbook for researching online.* London: SAGE.

Moon, Y. (1998) 'Impression management in computer-based interviews: The effects of input modality, output modality and distance', *Public Opinion Quarterly*, 62, (4), pp. 610-622.

O'Connor, H. & Madge, C. (2003) 'Focus groups in cyberspace: Using the Internet for qualitative research', *Qualitative Market Research: An International Journal*, 6, (2), pp. 133-143.

Walther, J. (1992) 'Relational communication in computer-mediated interaction', *Human computer research*, 19, (1), pp. 50-88.

6.4 Data Analysis

6.4.1 Quantitative Data

Bryman, A. & Cramer, D. (2001) *Quantitative data analysis with SPSS release 10 for windows: A guide for social scientists.* East Sussex: Routledge.

Keeping, E. S. (1995) *Introduction to statistical inference.* Princeton, NJ: Dover Publications.

Langdridge, D. (2003) 'The analysis of quantitative data', in Robson, C. (ed.) *Real world research.* Oxford, UK; Madden, Mass.: Blackwell Publishers, pp. 391-454.

Morgan, G. A., Leech, N. L., Gloeckner, G. W. & Caplovitz Barrett, K. (2004) *SPSS for introductory statistics: Use and interpretation.* Mahwah, NJ: Lawrence Erlbaum Associates.

Reid, S. (1987) *Working with statistics.* Cambridge: Polity Press.

Sheskin, D. (2003) *The handbook of parametric and nonparametric statistical procedures.* 2nd edn. Boca Raton, FL: CRC Press.

Vogt, P. W. (2005) *Dictionary of statistics and methodology.* Thousand Oaks, California: SAGE.

6.4.2 Qualitative Data

Glaser, B. G. & Strauss, A. (1967) *The discovery of grounded theory.* Chicago: Aldine.

Glaser, B. G. (1992) *Basics of grounded theory analysis: Emergence vs forcing.* Mill Valley, CA: Sociology Press.

Krippendorff, K. (1980) *Content analysis: An introduction to its methodology.* London: SAGE.

Miles, M. B. & Huberman, A. M. (1994) *Qualitative data analysis: An expanded sourcebook.* 2nd edn. Thousand Oaks, Calif.; London: SAGE.

Ponterotto, J. G. & Grieger, I. (1999) 'Merging qualitative and quantitative perspective in a research identity', in Kopala, M. and Suzuki, L. (eds.) *Using qualitative methods in psychology.* Thousand Oaks, California: SAGE, pp. 49-62.

QRS International (2002). Victoria, AUS: QSR International Pty Ltd.

Silverman, D. (1993) *Interpreting qualitative data: Methods for analysing talk, text and interaction.* London: SAGE.

Strauss, A. L. & Corbin, J. M. (1990) *Basics of qualitative research: Grounded theory procedures and techniques.* Newbury Park, Calif.; London: SAGE.

Tesch, R. (1990) *Qualitative research: Analysis types and software tools.* London: Falmer.

Weber, R. P. (1990) *Basic content analysis.* 2nd edn. Newbury Park, Calif.: SAGE.

Wolcott, H. F. (1994) *Transforming qualitative data: Description, analysis and interpretation.* Thousand Oaks, Calif.; London: SAGE.

Wrenn, W. B. (2002) *Marketing research: Text and cases.* New York: Haworth Press.

7.0 General References

This section list works of reference that were used in this study to provide definitions to theories, concepts and technologies.

Campbell, D., Stonehouse, G. & Houston, B. (2002) *Business strategy.* 2nd edn. Oxford: Elsevier.

Collins concise dictionary (4th edition) (1999). Glasgow: Harper Collins.

Keynes, J. M. (1936) *The general theory of employment, interest and money.* London: Macmillan.

UCAS (2005) *Universities and college admissions service (UCAS).* Available at: http://www.ucas.com (Accessed: 14th December 2005).

Welsh, I. (1993) *Trainspotting.* London: Secker & Warburg.

Wikipedia contributors (2006a) *Wikipedia: The free encyclopedia.* Available at: http://www.wikipedia.org/ (Accessed: 17 January 2006).

Wikipedia contributors (2006b) '4G'. *Wikipedia: The free encyclopedia.* Available at: http://en.wikipedia.org/w/index.php?title=4G&oldid=47450332 (Accessed: 9 April 2006).

Wikipedia contributors (2006c) 'MUD'. *Wikipedia: The free encyclopedia.* Available at: http://en.wikipedia.org/w/index.php?title=MUD&oldid=49177501 (Accessed: 18 April 2006).

Wikipedia contributors (2006d) 'New media'. *Wikipedia: The free encyclopedia.* Available at: http://en.wikipedia.org/w/index.php?title=New_media&oldid=48973931 (Accessed: 19 April 2006).

Wikipedia contributors (2006e) 'TrueType'. *Wikipedia: The free encyclopedia.* Available at: http://en.wikipedia.org/w/index.php?title=TrueType&oldid=48161186 (Accessed: 20 April 2006).

Wikipedia contributors (2006f) 'Role-playing game'. *Wikipedia: The free encyclopedia.* Available at: http://en.wikipedia.org/w/index.php?title=Role-playing_game&oldid=49292827 (Accessed: 21 April 2006).

DEVELOPING A PRACTICE-LED FRAMEWORK TO PROMOTE THE PRACTISE AND UNDERSTANDING OF TYPOGRAPHY ACROSS DIFFERENT MEDIA

VOL. 2 (Appendix)

Joyce Sheau Roei Yee
M.A. Communication Design

A thesis submitted in partial fulfilment of the requirements of the
University of Northumbria at Newcastle for the degree of Doctor of Philosophy

Research undertaken in the School of Design

October 2006

Abstract

This study presents a pedagogic framework that offers a new approach, structure and content for the teaching, understanding and application of typography in cross-media communication environments. Current theory and vocabulary used to describe typographic practice and scholarship are based on a historically print-derived framework. As yet, no new paradigm has emerged to address the divergent path that screen-based typography has taken from its traditional print medium. This study argues that the current model of typographic education is unable to provide design students with appropriate models, concepts and grammar to explore the potential of typography in screen-based media. Hence, a re-evaluation of the current framework is proposed in order to develop new approaches that will reduce misappropriation of typographic principles and aesthetic values in screen-based media.

This study is composed of three research stages. Stage One (consisting of a literature and design application review) was used to develop an understanding of the current typographic application in screen-based media. Stage Two (consisting of a questionnaire survey and in-depth interviews) was used to investigate the relevance of current typographic knowledge in relation to screen-based media. Additionally, this stage helped identify critical issues surrounding current and future typographic practice. Findings from Stages One and Two were used as a basis to develop a new framework. This framework was subsequently tested and refined in Stage Three through action research projects (with Graphic and New Media design students) and peer reviews (with design educators and professional practitioners). The final framework consists of six key attributes: an integrated model of knowledge, cross-media skills, cross-disciplinary influences, it is communication-focused, flexible and adaptable. It reflects a future model of a convergent media, not a continued separation of print and screen. This framework consists of two distinct areas of knowledge: Global Skills (Form, Content, Expression and Context) and Specialist Skills (Hyper-textuality, Interactivity, Temporality and Usability).

It is concluded that the approach and knowledge-base used to teach typography must be modified to reflect the challenges posed by media convergence, where transferable global skills are emphasised across a range of media. Typography's knowledge base has to be expanded to include specialist skills derived from technological and social changes in communication technologies. The principal contributions of the study are: the identification of transferable global typographic skills; the introduction of specialist design skills required for effective cross-media type

application; presentation of an integrated model of typographic knowledge and practice; a curriculum guide aimed at helping design educators plan and deliver typography in graphic and multimedia programmes; strategies and approaches to help designers remediate their print-derived knowledge and lastly, as a subject reference guide for visual communication design students.

The framework is not offered as an absolute representation of western-based typographic knowledge for cross-media application but instead should be considered as a signpost to help understand the current transition of knowledge between print and screen. Additionally, this framework has been developed and tested within a single educational environment. As a result, variations in teaching and learning styles were not taken into account. Audiences are urged to treat the framework as a 'work-in-progress' model that can be refined through additional field-testing in other educational environments. And finally, the application of the framework within a professional practice environment would require a comprehensive review of practice-based concerns and a further simplification of the framework.

CONTENTS PAGE

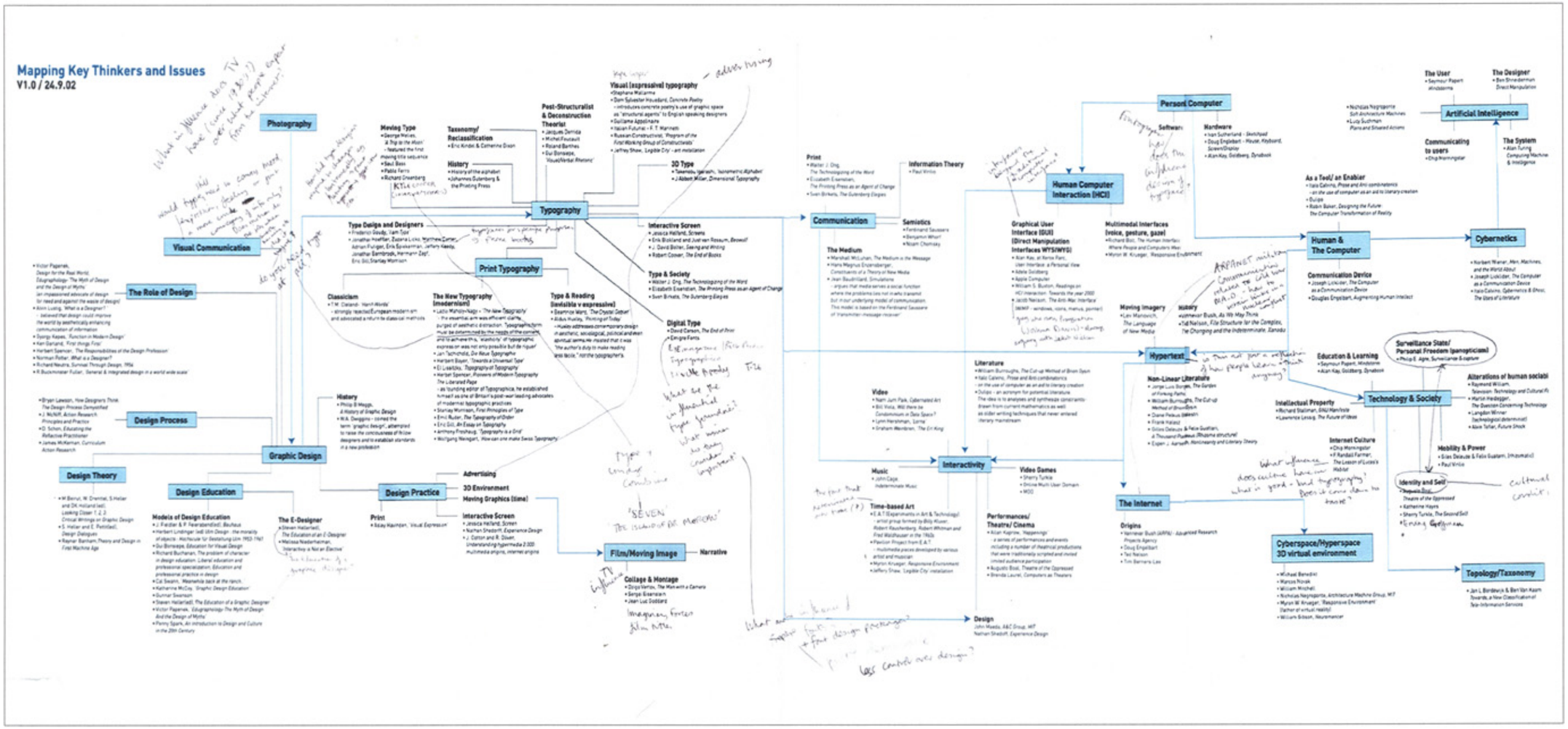
APPENDIX 1

1.1 Literature Map Review Annotations by Reviewers

1.1 Literature Map Review Annotations

Mapping Key Thinkers and Issues

V1.0 / 24.9.02



APPENDIX 2

2.1 Dynamic Literature Mapping: Typography in Screen-Based Media

Paper presented at the 5th European Academy of Design Conference held in Barcelona, Spain, April 2003

Dynamic Literature Mapping: Typography in Screen-Based Media

Abstract

This paper chronicles the development of a visual map representing a literature search on key theorists and thinkers in two principal topics: Typography and New Media. Its aim is to visualise and facilitate conceptual connections between key ideas and philosophies across disciplines. This literature map was drawn up by reviewing available influential literature within these topics. Related categories were later added and a further series of literature searches were conducted to build references in each topic. This on-going cyclical process serves to construct a comprehensive contextual map of knowledge. The benefit of the map is twofold. Primarily, aiding the researcher to navigate and understand complex layers of information. Secondly, allowing the researcher to present and share representations of knowledge. The clarity of the representation is crucial in eliciting the participation of fellow design researchers and practitioners to the development and growth of the literature map.

Introduction

The aim of this paper is to present a snapshot of an on-going process in a PhD research study. This snapshot captures the process of a literature search and review conducted for the PhD research degree. It is not meant to demonstrate the effectiveness of mapping nor provide a comprehensive list of literature in Typography and New Media. The first part of this paper details the development process of the literature map and its scholarship value in relation to the research enquiry. The second part provides instructions to readers who are interested to participate in further developments of the literature map.

A literature search and review are an essential starting point for a PhD research degree. An in-depth literature search will reveal the scope and breadth of ideas, theories and knowledge of the research area. A literature search will lead to a literature review. Hart (1998) writes that the literature review 'is integral to the success of academic research'. He defines a literature review as:

> The selection of available documents (both published and unpublished) on the topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfil certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to the research being proposed. (Hart, 1998, p.13)

Friedman (2001) states that there is no substitute for a literature review in pursuit of a research degree. He gives two simple but powerful reasons for this:

> Only a researcher who knows the current state of knowledge in a field can know whether his or her thesis makes an original contribution to the knowledge in that field.
>
> Only a researcher who convincingly outlines the current state of knowledge in a field can persuade a properly trained examiner or committee that the thesis contribution is original. (Friedman, 2001)

Subject of the Literature Search and Review

This literature search and review was conducted as part of a PhD research degree currently undertaken by the researcher. The primary aim of the research enquiry is to develop a practice-led framework for the application of typography in screen-based interactive media. Current theory and vocabulary utilised to describe typographic practice and scholarship are based on a historically print-derived framework. As a result, this research seeks to address the knowledge gap

by conducting a cross-disciplinary enquiry. Its aim is to develop a critical practice-led framework designed to inform design practitioners and educators about the future application of typography in screen-based interactive media.

Flatlands – Visualising Knowledge

The idea of 'flatland' is based on the classic book by Edwin A. Abbott, entitled Flatland: A Romance of Many Dimensions (1884). The narrator is A. Square, a four-sided polygon in a world of two-dimensional creatures (and thinking). Its inhabitants are geometric shapes that only see each other as lines of varied colour and light. They live in Flatland, where they think themselves as superior to their poor neighbours in Lineland who only have a point cross-section to deal with and can never get ahead of whoever is in front of them. All is orderly and unchanging until they get a visitor from the world of three-dimensionality, which challenges their fixed way of thinking and living. According to Tufte,

> Escaping this flatland is the essential task of envisioning information – for all the interesting worlds (physical, biological, imaginary, human) that we seek to understand are inevitably and happily multivariate in nature. (Tufte, 1990, p.12)

Maps are essentially our attempts to escape flatlands. Any information that needs to be communicated must be translated from a multifaceted representation into a two-dimensional surface. Maps come in a variety of forms and sizes. We are probably most familiar with cartographic maps, which provide geographic information about a place. Maps are used to communicate a specific kind of information through the usage of symbols, text, models and graphics. At its most basic level, to map is to visualise and communicate a specific group of information. Maps are useful to emphasize spatial relatedness, classification and connection. Almost any groups of information can be mapped out. As MacEachren points out in his paper, 'An evolving cognitive-semiotic approach to geographic visualization and knowledge construction' (2001), the role of mapping has evolved from being an information storage and communication device to a method for processing and analysing information. This perspective may have led to the increased application of mapping in other fields where a large body of information needs to be organised, analysed and communicated through other map users.

In the course of looking at alternate forms and usages of maps, the researcher discovered many variations. Some of the more commonly used maps are Concept Maps (Lawless and Smee, 1998; Oughton and Reed, 2000), Knowledge Maps (Wexler, 2001), Content Maps (Kinchin and Hay, 2000), Idea Maps (Pritchard, 1997), Cognitive Maps (Langfield-Smith, 1992; Eden, 1988), Strategy Maps (Fletcher and Huff, 1990) and Mind Maps (Buzan and Buzan, 1997). These maps

may have different functions, but essentially they are tools to facilitate the organisation of complex information and to visualise the representation of data in a manner understandable to other map users.

To start the mapping process, some form of information organisation is required. Organising information into sections and subsections will enable the mapmaker to construct connections between them. In the process of a literature review, a researcher will come across varied ideas and theories contained in different articles, books and published works over a given period of time (Hart, 1998). This provides a starting point for the researcher who will start constructing and deconstructing connections between the layers of information. Just as there are several layers of information to separate, there are also several layers of mapping to be constructed. In this study, the first step was to classify the literature into two principal topics.

Structuring the Map

Classification

Before the literature search was conducted, a topic list was compiled for the purpose of the search. The list began with the two principal topics: Typography and New Media. These two topics were obvious choices as they related directly to the topic of the research subject. However, as the nature of the research enquiry required a cross-disciplinary search, the map needed to present a wider representation of other disciplines. As a result, the literature map was divided into two general discipline areas. Definitions used for the purpose of this literature mapping are listed below.

> Visual Communication as a design discipline referred to the usage of a single, or a combination of, any graphic, photographic, moving imagery or textual element for the purpose of communicating a message to an audience.
>
> New Media referred to specific forms of digital and interactive technologies such as the Internet, Interactive television and CD-ROM medium.

Further classifications were added under each of the two principal topics. These were referred to as Subject Headings. However, this does not present the view that the Subject Headings were fixed in their categorisation. It only implies that the Subject Heading was influential in the development of knowledge and scholarship for that Topic. This list was not categorised based on any hierarchy, though the spatial placement of each Subject Heading illustrated their relative connection to each other. The further apart the Subject Headings were placed, the less related they were to each other when judged against the research subject.

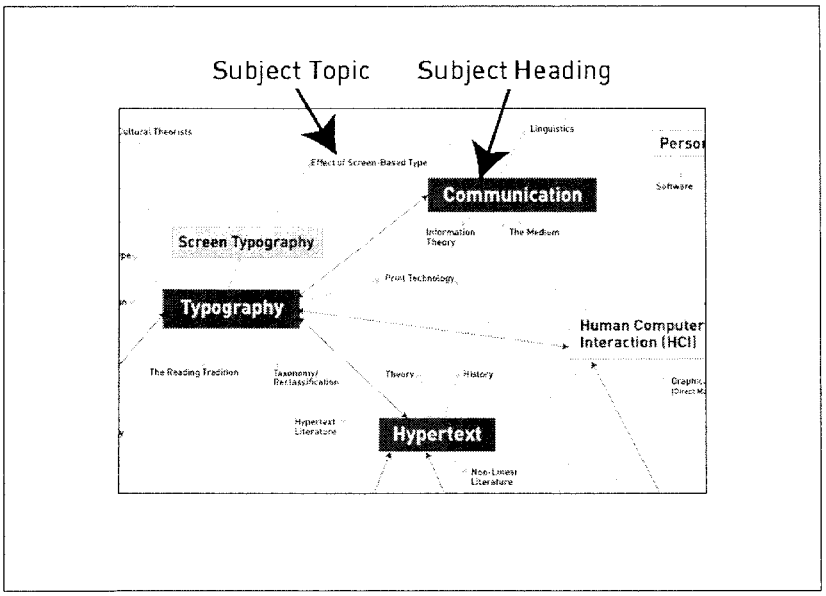


Figure 1.1. A close-up view indicating the Classification levels in the Literature Map

Under each Subject Heading, Subject Topics were added (Figure 1.1). Each source was classified based on its core ideas, concepts and narrative focus. The darker and lighter shaded arrows indicated possible links between key ideas and concepts. The researcher utilised the map to visualise possible theoretical influence and connections between different Subject Topics. Each Subject Topic had been allocated different gradient colour background to indicate their level of relevance and importance to the research study. The level of relevance receded in relation to the colour tint. A secondary role of the map was to help frame the research boundary and to focus the literature search to only relevant key topics. However, by including peripheral Subject Topics in the map, it provided a much more holistic view of the research enquiry. This was crucial as the research subject was dealing with issues that straddled many different disciplines.

It must be stressed that the classification put forward in this map is neither fixed nor definitive. They are considered as sign posts to assist the mapmaker and the map user to navigate through mass amounts of ideas, concepts and methodologies encountered in the literature. For the purpose of clarity, selected definitions of the Subject Headings are listed in the 'Contributing Instructions' section at the end of this paper. It is not the intention of the researcher to review all literature references contained in the map. Instead, the researcher will focus on literature mapped in the 'Typography', 'Communication', 'Hypertext' and 'Interactivity' groups. While these areas are the core focus of the theoretical development in the research enquiry, understanding their relationship with other disciplines are an essential process to understand the current state of knowledge within the research field.

Joining the Dots – Creating Contextual Links

As the literature search widens, the list of classification subjects expands and changes. Finding relationships between the ideas, concepts and methodologies allows the researcher to think analytically about the key ideas and to construct new knowledge structures in relation to the research subject. These links are indicated by the unidirectional and multidirectional arrows between Subject Headings with Subject Headings, and between Subject Headings with Subject Topics. However, these links have not been defined and include stylistic, methodological, argumentation, theoretical, influential, historical and beliefs connections.

Contributions to the Literature Map

Facilitating a Discourse

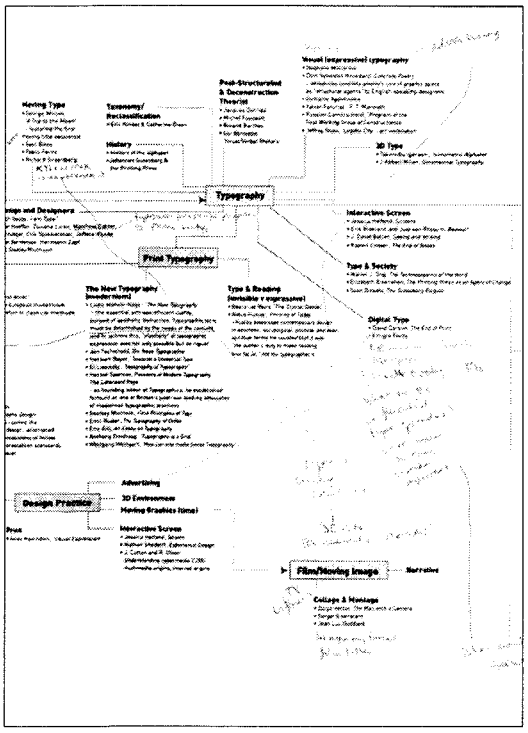
A key part to the development of the literature map is the contribution of fellow design researchers and practitioners. While the researcher has visualised the main structure and suggested contextual links in the map, participants are encouraged to add or suggest possible literature references and links. Two separate sessions were held by the researcher to facilitate contributions from fellow design researchers and practitioners. The first session was conducted at the Centre for Design Research, Northumbria University, where the research study is based.

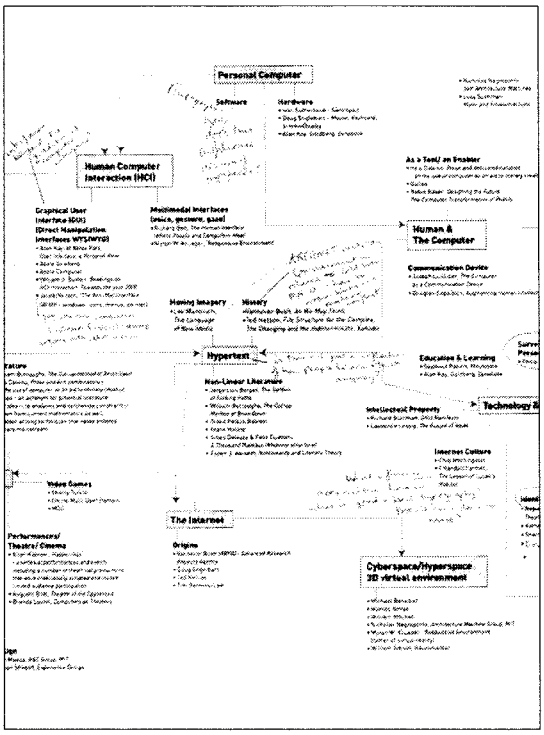
A brief power-point presentation was given to explain the aim of the literature map and to provide a contextual understanding of the subjects and classification. Subject Headings and Topics used in the map were listed and introduced to the participants. The participants' design backgrounds were varied, ranging from Product Designers, Graphic Designers, Design Researchers to Medical Product Researchers. This collection of multi-disciplinary participants was ideal as it reflected the cross-disciplinary approach of the literature search. Each discipline has its own established structure of knowledge classification and interpretation. These differences have helped enrich the content of the map.

Basic instructions were given to the participants on how they can contribute to the map. They were asked to:

1. Add any Literature, which they think, was missing from the map.
2. Add, delete or reroute existing contextual connections inferred by the researcher on the map.
3. Highlight 'hot' issues, which have a higher relevance to the research study and should be given more emphasis by the researcher.

Five copies of the literature map were posted around the presentation and seating area. The participants were asked to alter or add directly onto the map. Most participants took a few minutes to study the map in more detail before adding any comments to it. The participants' views and comments were recorded on these posters. These new references were then added formally to the map after the researcher has reflected on the relevance of the contribution to the research enquiry. Figures 1.2 and 1.3 are close-up examples of the commented posters collected during the first session.





Figures 1.2 and 1.3. A close-up of the literature map with participants' comments and contributions

As an Educational Tool

Following on from the first session held with design researchers and practitioners, a second session was held with second and third year Graphic Design students from Northumbria University. While there were interesting contributions from the students, the primary aim of this session was to introduce the richness of literature in a field traditionally deprived of quality and depth in its critical discourse. As Steven Heller (1997) writes, until twenty years ago, Graphic Design has been seen but not heard. And when critical discourse did start in the 1950s and 1960s, it was usually only in the academic arena, used mostly as critical design textbooks. It was only at the start of the 1980s that the profession looked to other ideas rooted in semiology and deconstruction theories to influence the critical discourse in Graphic Design.

The usage of maps as an education tool or technique has been well researched and documented. For example, many teachers have accepted 'Mental Maps' or 'Ideas Maps' as a useful way to establish or clarify students' knowledge about a particular topic (Pritchard, 1997). Pritchard mentions the idea of using maps to aid learning have been discussed in Novak and Govin's work (1984) and also the work of Harri-Augstein et al (1982). The construction of the mental maps or ideas maps are dependent on the level of understanding and application of skills to classify and organise the text given to the students. Farrand, Hussain and Hennessy presented the usage of 'Mind Maps' as 'an effective study technique when used to improve factual recall from written material' (2002, p.247). Kinchin and Hay (2000) write that the process of constructing and reconstructing knowledge using 'Concept Maps' will lead to meaningful learning. They go on to illustrate this point with a statement by Novak and Govin that 'students and teachers constructing concept maps often remark that they recognise new relationships and hence new meanings or, at least meanings they did not consciously hold before making the map' (1984, p.17).

Based on the positive and enthusiastic attitude shown by the students and the tutors of the course, the researcher feels that there is an opportunity to introduce key literature in the field of Graphic Design, Typography and New Media using this map as the main communicative device. It is an effective and powerful visual tool for students to investigate and form new links between cross-disciplinary subjects with their own design discipline.

The Next Step

Contributing Instructions

The second part of this paper aims to provide some basic guidelines for interested readers to participate in the further development of the literature map. Interested readers are advised to go through these steps to clarify how and what they can contribute to the growth and development of the literature map.

Step 1

Selected definitions of Subject Headings are listed in order of importance and relevance to the research project. It is recommended the participant read through them to reduce any ambiguity in way the classification has been set.

Typography:	The arrangement and appearance of type with a specific aim to communicate an implicit or explicit message to a reader.
Print Typography:	Relates specifically to typography produced for the medium of print and includes the aesthetic, philosophical and historical development of it.

Screen Typography:	Relates specifically to typography produced for the medium of screen and includes the aesthetic, philosophical and historical development of it.
Hypertext:	A termed coined by Theodore H. Nelson in the 1960s. He defined it as 'non-sequential writing – text that branches and allows choices to the reader, best read at an interactive screen' (Nelson, 1981).
Interactivity:	A process of describing a continuous two-way transfer of information between two or more sources.
Communication:	Communication as a discipline involves studying the nature, processes and effects of human communicative interaction. This encompasses the study of both oral and symbol-based written communication.
Graphic Design:	As defined by the American Institute of Graphic Arts (AIGA) is the profession that plans and executes the design of visual communication according to the needs of audiences and in the context for which communication is intended.
Technology and Society	The effects and role of technology in shaping all aspects of human society specifically human communication.

Step 2

Take a few minutes to peruse through the map. In order to view the map online, you can access it at www.cfid.co.uk/joyce/map.pdf. Participants are encouraged to read through the general instructions below before contributing to the map.

List down bibliographic references with corresponding Subject Heading or Titles from the map. If you disagree with the categorisation of subjects, and need to create a new Subject Heading or Title for your contribution, please indicate so in your response. The bibliographic reference should include the author's full name where possible and the title of the piece. If the date and publisher is known, please include those details as well.

If you disagree with the placement of the existing literature links on the map, please indicate where you think it should be placed.

If you disagree with the subject links suggested by the researcher, indicate where the new or alternate connections should be by listing down the two related subjects. In addition, indicate if the connections are unidirectional or multidirectional.

Send in your comments and contribution to the researcher at joyce.yee@northumbria.ac.uk.

Discussion

This poster and accompanying paper has provided a snapshot of the process and the result of a literature mapping conducted for a PhD research study. The development of the literature map has demonstrated an objective and subjective value. It remains an invaluable tool for the researcher to facilitate the understanding and construction of prior knowledge in the research enquiry. At the same time, it has provided an effective means of engaging participants to reveal their implicit knowledge and attitudes towards their own and other disciplines. Moving beyond the context of the research subject, the mapping process represents a valuable contribution to design research process methods as it helps contextualised and formulate the framework for practice-based enquiry.

While it is important to consolidate the comments and contributions of fellow design researchers and practitioners, it is vitally important that this remains on going and evolving process. As the interpretation of the literature presented by the researcher is directly related to the research enquiry, the structures and relationships in it may change and shift in accordance to the development of the study. This evolutional shift will continue to occur as the researcher develops a declarative, procedural and finally content knowledge of the research subject (Hart, 1998).

References

Abbott Edwin, A. (1884) *Flatland : A romance of many dimensions.* New and rev. edn. London: Seeley.

Buzan, T. & Buzan, B. (1997) *The mind map book.* London: BBC Books.

Eden, C. (1988) 'Cognitive mapping', *European Journal of Operational Research*, 36, (1), pp. 1-13.

Farrand, P., Hussain, F. & Hennessy, E. (2002) 'The efficacy of the 'mind map' strategy technique', *Medical Education*, 36, pp. 426-431.

Fletcher, K. E. & Huff, A. S. (1990) 'Strategic argument mapping: A study of strategy reformulation at AT&T', in Huss, A. S. (ed.) *Mapping strategic thought.* Chichester: Wiley, pp. 165-194.

Friedman, K. (2001) 'Literature and an original contribution to knowledge', *PhD-Design Discussion List*, 25 July [Online]. Available e-mail: phd-design@jiscmail.ac.uk.

Harri-Augstein, S., Smith, M. & Thomas, L. (1982) *Reading to learn.* London: Methuen.

Hart, C. (1998) *Doing a literature review: Releasing the social science research.* London: SAGE.

Heller, S. (1997) 'Introduction: A closer look at looking closer', in Beirut, M., Drenttel, W., Heller, S. and Holland, D. (eds.) *Looking closer 2: Critical writings on graphic design.* New York: Allworth, pp.

Kinchin, I. M. & Hay, D. B. (2000) 'How a qualitative approach to concept map analysis can be used to aid learning by illustrating patterns of conceptual development', *Educational Research*, 42, (1), pp. 43-57.

Langfield-Smith, K. (1992) 'Exploring the need for a shared cognitive map', *The Journal of Management Studies*, 20, (3), pp. 349-368.

Lawless, C. & Smee, P. (1998) 'Using concept sorting and concept mapping in business, public administration and in education', *Educational Research*, 40, (2), pp. 219-235.

MacEachren, A. M. (2001) 'An evolving cognitive-semiotic approach to geographic visualization and knowledge construction', *Information Design Journal*, 10, (1), pp. 26-36.

Nelson, T. (1981) *Literary machines.* California: Mindful Press.

Novak, J. D. & Govin, D. B. (1984) *Learning how to learn.* Cambridge: Cambridge University Press.

Oughton, J. M. & Reed, W. M. (2000) 'The effect of hypermedia knowledge and learning style on student-centred concept maps about hypermedia', *Journal of Research on Computing in Education*, 32, (3), pp. 366-384.

Pritchard, A. (1997) 'The refinement of an 'ideas map' as a means of assessment and of enhancing children's understanding of texts', *Reading*, 31, pp. 55-59.

Tufte, E. R. (1990) *Envisioning information.* Cheshire, Connecticut: Graphic Press.

Wexler, M. N. (2001) 'The who, what and why of knowledge mapping', *Journal of Knowledge Management*, 5, (3), pp. 249-263.

Appendix 1

Bibliographic References Featured in the Literature Map

Bellantoni, J., and Woolman, M. (1999) *Type in motion: innovations in digital graphics.* London: Thames and Hudson.

Benedikt, M. (1991) 'Cyberspace: some proposals'. In Benedikt , M. (ed.) *Cyberspace: first steps.* Cambridge: MIT Press, pp.119-224.

Benjamin, W. (1969) 'The work of art in the age of mechanical reproduction.' In Arendt, H. (ed.) *Illuminations.* Trans. Harry Zohn. New York: Schocken, pp.217-252.

Berners-Lee, T. and Fishetti, M. (1999) Weaving the web: the original design and ultimate destiny of the world wide web, by its inventor. San Francisco.

Birkets, S. (1996) The gutenberg elegies: the fate of reading in an electronic age. London: Faber and Faber.

Blokland, E. and Van Rossum, J. (1989) *Beowulf* [Typeface]. Available from http:// www.letterror.com/foundry/beowolf/index.html (Accessed 28th of January 2003).

Boal, A. (1985) *Theatre of the oppressed.* Trans. Charles A. and Maria-Odilia Leal McBride, New York: Theatre Communications Group.

Bohn, W. (1993) *Apollinaire, visual poetry and art criticism.* Lewisburg: Bucknell University Press.

Bohn, W. (2001) *Modern visual poetry.* Newark: University of Delaware Press; London: Associated University Presses.

Bolt, R. (1980) 'Put that there: Voice and gesture at the graphics interface.' *Computer Graphics,* 4(3), July 1980, pp.262-270.

Bolt, R. (1984) *The human interface: where people and computers meet.* Belmont, Calif.; London: Lifetime Learning.

Bolter, J. D. (2001) *Writing space: computers, hypertext and the remediation of Print.* 2nd edn. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Bonsiepe, G. (1965) 'Education for visual design.' *Ulm,* no. 13/14, March 1965.

Borges, J.L. (1941) 'The garden of the forking paths.' In Yates, D. A. and Irby, J. E. (eds.) *Labrinths: selected stories and other writings,* Trans. D. A. Yates. New York: New Directions, pp.19-29.

Buchanan, R. (1998) 'Education and professional practice in design.' *Design Issues*, 14 (2) Summer 1998, pp.63-66.

Buchanan, R. (2000) 'The problem of character in design education: liberal education and professional specialization.' In *Reinventing design education in the University*, Perth, Australia, 11-13 December 2000.

Burroughs, W. (1978) 'The cut-up method of Brion Gysin.' In *The Third Mind*, New York, Viking. pp.29-33.

Bush, V. (1945) 'As we may think.' *The Atlantic Monthly*, 176(1), pp.101-108.

Cage, J. (1959) *Indeterminacy: new aspect of form in instrumental and electronic music.* Reading by John Cage: Music by David Tudor [12inch record]. New York: Folkways Records.

Calvino, I. (1981a) *If on a winter's night a traveller.* Trans. W. Weaver. New York: Harcourt Brace Jovanovich.

Calvino, I. (1981b) *Prose and anti-combinatorics.* Motte, 1986, Paris, Gallimard, pp.143-152.

Calvino, I. (1986) 'Cybernetics and ghosts.' In *The uses of literature*, New York: Grove Press, pp.3-27.

Calvino, I. (1995) 'The burning of the abominable house'. In *Numbers in the Dark*, Trans. Tim Parks, New York: Grove Press, pp.176-189.

Chartier, R. (1995) *Forms and meanings.* Pennsylvania: University of Pennsylvania Press.

Chomsky, N. (1968) *Language and mind.* New York,:Harcourt, Brace & World.

Chomsky, N. (1975) *Reflections on language.* New York: Pantheon Books.

Cleland, T.M. (1999) 'Harsh Word'. In Beirut, M., Helfand, J., Heller, S. and Poyner, R. (eds.) *Looking closer 3: classic writings on graphic design.* New York: Allworth Press.

Coover, R. (1992) 'The end of books.' *The New York Times Book Review*, 21 June 1992, 11, pp.23-25.

Cotton, J., and Oliver, R. (1997) Understanding hypermedia 2.000: multimedia origins, internet origins. London: Phaidon Press.

Crawford, D. (ed.) (1999) Intellectual property in the age of universal access. New York: ACM Press.

Cross, N. (ed.) (1984) *Developments in design methodology.* Chichester: Wiley.

Crystal, D. (1987) *The cambridge encyclopedia of language*. Cambridge: Cambridge University Press.

Cullen, M. (1998) 'Future Te<a>ch.' In Heller, S. (ed.) *The education of a graphic designer*, New York: Allworth Press.

De Landa, M. (1991) *War in the age of intelligent machines*. New York: Zone Books.

Deleuze, G. and Guattari, F. (1987). 'Introduction: Rhizome'. In *A thousand plateaus: capitalism and schizoprenia part II*, Trans. B. Massumi. Minneapolis: University of Minnesota Press, pp.3-7.

Derrida, J. (1976) *Of Grammatology*. Trans. G. C. Spivak. Baltimore: Johns Hopkins University Press.

E.A.T. (1966) *9 Evenings: Theatre and Engineering*. Program.

Eisenstein, E. L. (1979a) *The printing press as an agent of change: communications and cultural transitions*, Vol.1. Cambridge: Cambridge University Press.

Eisenstein, E. L. (1979b) *The printing press as an agent of change: communications and cultural transitions*, Vol.2. Cambridge: Cambridge University Press.

Engelbart, D. (1962) *Augmenting human intellect: a conceptual framework*. Summary report AF0SR-3223 under Contract AF 49, SRI Project 3578 for Air Force Office of Scientific Research, Menlo Park, California: Stanford Research Institute, pp.638-1024.

Evans, B., Powell, J. and Talbot, R. (1982) *Changing design*. Chichester: Wiley.

Fiedler, J. and Feierabend, P. (eds.) (2000) *Bauhaus*. Koln: Konemann.

Fiske, J. (1987) *Television culture*. London: Routledge.

Froshaug, A. (1967) 'Typography is a grid'. *Designer*, no 167: January 1967.

Garland, K. (1999) 'First things first'. In Beirut, M., Helfand, J., Heller, S. and Poyner, R. (eds.) *Looking closer 3: classic writings on graphic design*. New York: Allworth Press, pp.154-155.

Gentner, D. and Nielsen, J. (1996) 'The anti-mac interface'. *Communications of the ACM 39*, no.8, April, pp.70-82.

Gibson, W. (1986) *Neuromancer*. London: Grafton.

Gill, E. (1988) *An Essay on Typography*. (A facsimile reissue of the 1936 ed.), London: Lund Humphries.

Goffman, E. (1959) The presentation of self in everyday life. New York: Doubleday.

Goldberg, A. and Kay, A. (1977) 'Personal dynamic media'. *Computer*, 10 (3), March 1977, pp.31-41.

Goldberg, A. (Ed.) (1988) *A history of personal workstations*. New York: ACM Press History Series.

Haraway, Donna J. (1991) *Simians, cyborgs and women: the reinvention of nature*. London: Free Association Books.

Hayles, N. K. (1994). 'Boundary disputes: homeostasis, reflexivity, and the foundations of cybernetics'. *Configurations*, 2, pp.441-467.

Heidegger, M. (1977) *The question concerning technology and other essays*. Trans. W. Lovitt. New York: Harper and Row.

Helfand, J. (2001) *Screen*. New York: Princeton Architectural Press.

Heller, S. (ed.) (1998) *The education of a graphic designer*. New York: Allworth Press.

Heller, S. (ed.) (2001) *The education of an e-designer*. New York: Allworth Press.

Heller, S. and Petit, E. (eds.) (1998) *Design dialogues*. New York: Allworth Press.

Hershman, L. (1979-83). *Lorna* [online]. Available from http:// www. lynnhershman.com/investigations/voyerism/lorna/lorna.html (Accessed 26 January 2003).

Hershman, L. (1990) 'The fantasy beyond'. In *Illuminating video: an essential guide to video art*. New York: Aperture/BAVC, pp.267-273.

Huxley, A. (1928) Introduction, printing of to-day: An illustrated survey of post-war typography in Europe and the United States, London: Peter Davies Limited/Harper and Brothers.

Jackson, K. David, Vos, E. and Drucker, J. (eds.) (1996) *Experimental, visual, concrete: avant-garde poetry since the 1960s*. Amsterdam; Atlanta: Ga., Rodopi.

Joyce. M. (1987) *Afternoon, a story*. [CD-ROM] Eastgate Systems.

Kaprow, A. (1961) 'Happenings in the New York scene'. *Art News*. 60(3), pp.36-39, pp.58-62.

Kaprow, A. (1966) *Assemblage, environments and happenings*. New York: Harry N. Abrams.

Kay, A. (1995) 'User interface: a personal view'. In B. Laurel (ed.) *The Art of Computer Interface Design*, Reading, Mass.: Addison-Wesley, pp.191-207.

Kepes, G. (1949) 'Function in modern design'. In *Graphic Forms: The Arts as Related to the Book*, Cambridge, Mass.: Harvard University Press.

Kernan, Alvin B. (1987) *Printing technology, letters & Samuel Johnson*. Princeton; Guildford: Princeton University Press.

Kluver. B. (1968) 'The garden party'. In *The machine as seen at the end of the mechanical age*. New York: Museum of Modern Art, pp.168-171.

Kluver. B. (1972) 'The pavilion'. In Kluver, B. , Martin, J. and Rose, B. (eds.) *Pavillion*. New York: Dutton.

Kruger, M. (1977) 'Responsive environments'. *AFIPS 46 National computer conference proceedings*. Montvale, N.J.: AFIPS Press, pp.423-433.

Kurzweil, R. (1990) *The age of intelligent machines*. Cambridge, Mass.; London: MIT Press.

Landow, G.P. (ed.) (1994) *Hype/text/theory*. Baltimore: Johns Hopkins University Press.

Landow, G.P. (1992) *Hypertext: the convergence of contemporary critical theory and technology*. Baltimore: Johns Hopkins University Press.

Laurel, B. (ed.) (1990) *The art of human-computer interface design*. Reading, Mass.; Wokingham: Addison-Wesley.

Laurel, B. (1993) *Computers as theatre*. Reading, Mass.; Wokingham: Addison-Wesley.

Lawson, B. (1990) *How designers think: the design process demystified* (2nd ed). Oxford: Butterworth Architecture.

Lessig, L. (2001) *The future of ideas*. New York: Random House.

Licklider, J.C.R. and Taylor R.W. (1968) 'The computer as a communication device'. *Science and Technology*, April. Reprinted in Digital SRC Research Report 61, 7 August 1990. Available from http://gatekeeper.dec.com/pub/DEC/SRC/research-reports/abstracts/src-rr-061.html.

Lindinger, H. (Ed.) (1990) *Ulm Design: The morality of objects: Hochscule for Gestaltung Ulm 1953-1962*. Berlin: Ernst & Sohn.

Lissitzky, E. (1923) 'Topography of typography'. *Merz*, no.4, July 1923, Hannover.

Lupton, E. and Miller, J.Abbott (1996) *Design writing research: Writing on graphic design*. New York: Kiosk.

Lustig, A. (1958) *The collected writings of Alvin Lustig*. New Haven, CT: Holland R, Melson, Jr.

Maholy-Nagy, L. (1923) 'The new typography'. *Staatliches Bauhaus in Weimer, 1919-1923*, Munich.

Magnus Enzensberger, H. (1974) 'Constituents of a Theory of the Media'. In *The Consciousness Industry*. Trans. Stuart Hood. New York: Seabury Press.

Manovich, L. (2001) *The language of new media*. Masssachussets: MIT Press.

Marinetti, F.T. (1913) 'Destruction of syntax-imagination without strings-words–freedom'. *Lacerba*, 15 June, Florence: P. Lang.

McCoy, K. (2001) 'Recent directions in graphic design education'. In Heller, S. (ed.) *The education of an e-designer*. New York: Allworth Press.

McKernan, J. A. (1991) *Curriculum action research: a handbook of methods and resources for the reflective practitioner*. London: Kogan Page.

McLuhan, M. (1962) *The gutenberg galaxy: the making of typographic man*. London: Routledge & Kegan Paul.

McLuhan, M. (1964) *Understanding media: the extensions of man*. London: Routledge & Kegan Paul.

McLuhan, M. and Fiore, Q. (1967) *The medium is the massage*. New York: Random House.

McNiff, J. (1988) *Action research: principles and practice*. Basingstoke: Macmillan Education.

Meggs, P. B. (1983) *A history of graphic design*. London: Allen Lane.

Miller, J. Abbott (1996) *Dimensional typography: case studies on the shape of letters in virtual environments*. Princeton: Princeton Architectural Press.

Mitchell, W. (1995) *City of Bits: Space, Place, and the Infobahn*. Cambridge: MIT Press.

Morningstar, C. and Farmer, F.R. (1991) 'The lessons of lucasfilm's habitat'. In Benedikt, M, (ed.) *Cyberspace: First steps*. Masachussetts: MIT Press.

Morrison, S. (1936) *First principles of typography*. New York: The Macmillan Company.

Moultrop, S. (1995) *Victory garden*. [CD-ROM] Eastgate Systems.

Muller-Brockmann, J. (ed.) (1995) *Josef Muller-Brockmann: designer: a pioneer of Swiss graphic design*. Baden, Switzerland: Verlag Lars Muller.

Nam, J.P. (1966) 'Cybernated Art'. *Manifestos, Great Bear Pamplets*. New York: Something Else Press, pp.24.

Negroponte, N. (1970) *The architecture machine.* Massachussetts: MIT Press.

Negroponte, N. (1995) *Being digital.* New York: Hodder Stoughton.

Nelson, T. (1965) 'A file structure for the complex, the changing and the indeterminate'. In Winner. L., (ed.) *Association for Computing Machinery: Proceedings of the 20th National Conference*, pp.84-100.

Neutra, R. (1954) *Survival through design.* Oxford: Oxford University Press.

Niederhelman, M. (2001). 'Interactivity is not an elective'. In Heller, S, (ed.) *The education of an e-designer.* New York: Allworth Press.

Nielsen, J. (2000) *Designing web usability.* Indianapolis, Ind.: New Riders.

Norman, D.A. (1986) *The psychology of everyday things.* New York: Basic Books.

Novak, M. (1991) 'Liquid architectures in cyberspace. In Benedikt, M. (ed.) *Cyberspace: first steps.* Cambridge: MIT Press, pp.225-254.

Ong, W. J. (1988) *Orality and literacy: The technologizing of the word.* London: Routledge.

Papanek, V. (1972) *Design for the real world.* London: Thames and Hudson.

Papanek, V. (1975) 'Edugraphology – The myth of design and the design of myths'. *Icongraphic*, no.9, Croydon, England.

Papert, S. (1980) 'Computers and computer cultures'. In *Mindstorms.* New York: Basic Books, pp.19-37.

Papert, S. (1993) *The children's machine: rethinking school in the age of the computer.* New York: Basic Books.

Papert, S. (1996) *The connected family: bridging the digital generation gap.* Atlanta: Longfellow Press.

Perec, G. (1980) *Life a user's manual.* Trans. David Bellos. Boston: David Godine.

Pinker, S. (1994) *The language instinct.* New York: W. Morrow and Co.

Porter, D. (1997) *Internet Culture.* New York: Routledge.

Potter, N. (1980) *What is a designer: things, places, messages* (Rev. and extended). Reading, Berkshire: Hypen.

Queneau, R. (1961) 'One hundred thousand million poems'. In Mathews, H, and Brotchie, A. (eds.) *Oulipo Compendium*, Trans. Stanley Chapman. London: Atlas Press, 1988, pp.15-33.

Queneau, R. (1973) 'Story as you like it'. *Motte*, Paris: Gallimard, 1986, pp.32-39.

Robertson, A. (ed.) (1996) *4D Dynamics Conference Proceedings*, revised edition. Leicester: DeMontfort University.

Ruder, E. (1959) 'The typography of order'. *Graphis*, 85, September/October.

Saporta, M. (1962) *Composition no. 1. Roman.* [A series of loose leaves, to be read in any order.] Paris.

Saussure, F. D. (1960) *Course in general linguistics* 3rd edn. Bally, C. and Sechehaye, A. in collaboration with Reidlinger, A. (eds.), Trans. Wade Baskin. New York: McGraw-Hill.

Schon, D. A. (1986) *Educating the reflective practitioner: toward a new design for teaching and learning in the professions.* San Francisco, California: Jossey-Bass.

Shaw, J. (1990) *Legible City* [Interactive Art Installation]. Available from http:// www.jeffrey-shaw.net/html_main/show_work.php3?record_id=83. (Accessed 26 January 2003).

Shedroff, N. (2001) *Experience design 1*, Indianapolis, Ind.: New Riders.

Shneiderman, B. (1983) 'Direct Manipulation: a step beyond programming languages'. *IEEE, Computer,* 16 (8), pp.57-69.

Simon, H. A. (1968) *The sciences of the artificial.* Cambridge (Mass.); London: M.I.T. Press.

Sparke, P. (1982) *An introduction to design and culture in the twentieth century.* London: Allen & Unwin.

Spencer, H. (1964) 'The responsibilities of the design profession'. *Penrose Annual,* 57, London.

Spencer, H. (1969) *Pioneers of modern typography.* London: Lund Humphries.

Stallman, R. (1985) 'The GNU manifesto'. *Dr. Dobb's Journal*, 10(3):30, March 1985.

Stallman, R. (1999) 'The GNU operating system and the free software movement'. In DiBona, C., Ockman, S. and Stone, M. (eds.) *Open sources: voices from the open source revolution.* Sepastopol, Calif.: O'Reily & Associates.

Sterne, L. (1873) *The life and opinions of Tristram Shandy*, Vol 1. London: Navarre Society Ltd.

Suchman, Lucy A. (1987) *Plans and situated actions: the problem of human-machine communication.* Cambridge: Cambridge University Press.

Sutherland, I.E. (1963) 'Sketchpad: a man-machine graphical communication system'. In *American Federation of Information Processing Societies (AFIPS) Conference Proceedings 23,* Spring Joint Computer Conference, pp.229-246.

Swann, C. (2000) 'Meanwhile, back on the ranch...' In *Foundations for the future, doctoral education in design*, La Clusaz, France, 8-12 July.

Swanson, G. (1998) 'Graphic design education as a liberal art: design and knowledge in the university and the "Real World"'. In Heller, S. (ed.) *The education of a graphic designer.* New York: Allworth Press.

Thimbleby, H. (1990) *User interface design.* New York: ACM; Wokingham: Addison-Wesley.

Toffler, A. (1970) *Future shock.* New York: Random House.

Tschichold, J. (1995) *The new typography: a handbook for modern designers.* Trans. Ruari McClean. Berkeley: University of California Press.

Turing, A. (1950) 'Computing machinery and intelligence'. *Mind: a quarterly review of psychology and philosophy*, 59(236), October, pp.433-460.

Turkle, S. (1984a) 'Video games and computer holding power'. In *The second self: computers and the human spirit*, London: Granada, pp.64-92.

Turkle, S. (1984b) *The second self: computers and the human spirit.* London: Granada.

Turkle, S. (1995) *Life on the screen: Identity in the age of the internet.* New York: Simon & Schuster.

Viola, B. (1982) 'Will there be condominiums in data space?' In Violette, R. (ed.) *Reasons for Knocking at an Empty House.* 1995. Cambridge: MIT Press, pp.121-135.

Virilio, P. (1997) *Open sky.* Trans. Julie Rose, London: Verso.

Virilio, P. (2000) *The information bomb.* Trans. Chris Turner, London: Verso.

Warde, B. (1955) *The crystal goblet: sixteen essays on typography.* Jacob, H. (ed.) London: Sylvan Press.

Webster, M. (1995) 'Reading visual poetry after futurism: Marinetti, Apollinaire, Schwitters, Cummings'. *New Foundations*, Vol.4, New York: P. Lang.

Weinbren, G. (1991) *Sonata* [online]. Available from http://www.hyperbole.com/lumiere/sonata.html (Accessed 26 January 2003).

Whorf, B. L. (1967) *Language, thought, and reality: selected writings of Benjamin Lee Whorf.* Carroll, J.B. (ed.), Cambridge, Mass.: The M.I.T. Press.

Wiener, N. (1948) *Cybernetics: or control and communication in the animal and the machine.* New York: John Wiley & Sons.

Wiener, N. (1950) *The human use of human beings: cybernetics and society.* London: Eyre and Spottiswoode.

Williams, R. (1972) *Television: technology and cultural form.* London: Fontana.

Winner, L. (1986) *The whale and the reactor: a search for limits in an age of high technology.* Chicago: University of Chicago.

Wolfgang, W. (1972) 'How can one make swiss typography?' reprinted in *Octavo*, no.4, London 1987.

Young, R., Cooper, A. and Blair, S. (2001) 'Redesigning design education, the next Bauhaus?' In *ICSID Educational Seminar*, Seongnam, South Korea, 5-7 October 2001.

APPENDIX 3

Conducted as Part of the Design Application Review Described in Chapter 4 (Volume 1)

3.1 Media and Design Process Review Process

3.1.1 Stage One: Selection of Delivery Channels and Content Genres

3.1.1.1 Selection Sources

Interactive screen-based media are defined as any digital medium which utilizes a screen as a physical interface between the user and medium to deliver interactive content. Interactive content can be defined as content containing both interactive and non-interactive elements. These elements are defined by the World Wide Web Consortium (W3C) organization as:

> A piece of content that, by specification, may have associated behaviours to be executed or carried out as a result of user or programmatic interaction. A non-interactive element is an element that, by format specification, does not have associated behaviours. The expectation of this document is that interactive elements become enabled elements in some sessions, and non-interactive elements never become enabled elements. (2002)

In addition to using the W3C's definition, other sources were referred to in order to inform the identification and selection of suitable delivery channels and content genres for the purpose of this study. They included:

1. Design awards (refer to Section 3.1.2.1 for the complete list)
2. Design textbooks:
    a. *What is Web Design* (MacDonald, 2003)
    b. *The Digital Designer* (Pite, 2003)
    c. *The Design of Sites* (Van Duyne et al., 2003)
    d. *Digital Creativity* (Wands, 2002)
3. Academic studies relating to digital and content genres:
    a. 'Genre Based Navigation on the Web' (Roussinov et al., 2001)
    b. 'The Form is the Substance: Classification of Genres in Text' (Dewdney et al., 2001)
    c. 'Genres and the Web: Is the personal home page the first uniquely digital genre?' (Dillon and Gushrowski, 2000)
    d. 'The Functionality Attribute of Cybergenres' (Shepherd and Watters, 1999)
    e. 'Assembling a Balance Corpus from the Internet' (Dewe et al., 1998)
    f. 'Reproduced and Emergent Genres of Communication on the World-Wide Web' (Crowston and Williams, 1997)

3.1.1.2 Defining Different Interactive Screen-based Delivery Channels

For the purpose of this study, six general types of interactive screen-based delivery channels were identified. They are:

1. The Internet
2. CD-ROM, DVD-ROM and enhanced CD-ROM
3. Kiosk terminal
4. Digital television
5. Mobile computing
6. PC and console gaming platform

Detailed descriptions of these six channels will now be provided.

The Internet

According to the Webopedia online dictionary, the Internet is 'a global network connecting millions of computers. More than a hundred countries are linked into exchanges of data, news and opinions' (Jupitermedia, 2006). This medium allows users to connect and access formatted documents globally, hosted through a computer similarly connected to the Internet.

CD-ROM, DVD-ROM and Enhanced CD-ROM

CD-ROM stands for Compact Disc-Read-Only Memory, a type of optical disk capable of storing large amounts of data, ranging from 650MB (megabytes) to 1GB (gigabytes).

DVD stands for Digital Versatile Disc, an optical storage format whose storage capacity can reach up to 17GB. Because of its capacity, it has now become a popular medium to distribute high quality digital movies. DVDs can be played either from a DVD-ROM player installed on a computer or on a dedicated DVD Player that is connected directly to a television.

Enhanced CD is a term that describes several different types of disc formats that all do basically the same thing: they allow a CD that contains both audio and computer data to play on either a CD audio player or a CD-ROM drive. For example, an audio CD will contain some additional multimedia material to complement the audio tracks.

Kiosk Terminal

A kiosk is an interactive display or terminal giving access to an Intranet or Internet. Kiosks installed in shops are usually used to help shoppers place orders or search for item availability. Kiosks are also widely used in exhibitions as a means of delivering interactive content.

Digital Television

Also known as Interactive TV or Enhanced TV. Digital television is television with the possibility of interactive content and enhancements. Digital television provides richer entertainment, interaction and more information pertaining to the shows, props and people involved in its creation. Users are able to link to external websites, conduct online e-commerce and even send e-mail. Data from users are sent via telephone lines or digital cables.

Mobile Computing

This term refers to small, portable and wireless mobile communication and computing devices. These devices include Pocket PCs, mobile phones and Personal Digital Assistants (PDAs). Currently, the most common mobile communication device is the mobile phone.

PC and Console Gaming Platform

Interactive digital games allow gamers to play, interact and progress through virtual universes controlled by the computer. Gamers have the choice of playing against computer-driven opponents or with other gamers in a multi-user environment through an online network. These games are platform specific, either PC or console-based. The current brands of console available include Sony Playstation 2, Nintendo Game Cube and Microsoft Xbox.

3.1.1.3 Defining Different Types of Content Genres

In addition to the media categorization exercise, twelve general types of content genre were identified (informed by sources referred to in Section 3.1.1.1). They are:

1. Information portal
2. E-zine
3. News
4. E-commerce
5. Corporate communication and promotion
6. Non-government organization
7. Government and public sector organization
8. Community
9. Entertainment
10. Education and reference

11. Experimental
12. Personal home page

Definitions of these content genres are expanded upon below, and examples of each are given in Volume 1, Chapter 4, Section 4.5.1.

Information Portal

Portal is a term used to describe a site that serves as a starting point to other sites or activities on a network. The first generation of portal sites such, as America Online (AOL), provided access to the Internet but now most portals offer a wide range of services. Webopedia (Jupitermedia, 2006), describes a portal as 'a website or service that offers a broad array of resources and services, such as e-mail, forums, search engines, and on-line shopping malls.'

E-Zine

This is an abbreviated term for electronic magazine delivered over the Internet or through email. Generally, it is a periodic publication modelled after its print counterpart. However there are some E-zines which exist only as online versions. They generally contain feature articles and current news of their related subject.

News

News sites began when traditional news providers (through print, television and radio) moved their content online. These include the BBC, The Guardian and The Times. Unlike their print counterpart, revenue through these free online news sites are usually generated by advertising revenue rather than subscription rates.

E-Commerce

This is an abbreviated term for electronic commerce. In this study, this term refers to a branch of business activity that employs content dedicated to the buying and selling of goods or services through a computer network.

Corporate Communication and Promotion

Content used to communicate and promote a company's brand, corporate information, products and services. The digital medium is normally used in conjunction with other media as part of a company's marketing strategy.

Non-Government Organization

Content generated by any non-governmental organization for the purpose of informing, promoting or disseminating relevant information.

Government and Public Sector Organization

Content generated by any government or public sector organizations for the purpose of informing, promoting or disseminating relevant information.

Community

Content that facilitates the creation of an online community through features such as weblog, chat application, bulletin board and multi-user domains/dungeons/dimension (MUD). Its content is created by and for the community of users.

Entertainment

There are two main forms of online entertainment content.

1. WATCH: To be an external subject with no direct interaction with content, for example watching an online movie or animation.
2. PLAY: To interact directly with content, for example playing an online game.

Education and Reference

Content containing educational material delivered through an electronic medium. Also known as distance learning or e-learning. The objective of electronic-learning is to facilitate learning and self-assessment using digital media as the primary delivery vehicle.

Experimental

A term used to describe content which challenges the technological and design boundaries of current practices.

Personal Home Page

Projects initiated, designed and produced by individuals. The content of home sites varies and is dependent on the interest and technical skills of each individual.

3.1.2 Stage Two: Selection of Design Projects

3.1.2.1 Design Project Selection Criteria

Following the content and media categorization exercise, suitable examples of best practices in each content genre were identified and compiled using two primary sources, from current interaction design monographs, and award-winners of internationally recognized interaction and web-based awards.

The design monographs referred to were:

1. *Deep Sites: Intelligent Innovation in Contemporary Web Design* (Bruinsma, 2003)
2. *Taschen's 1000 Favourite Websites* (Wiedemann, 2003)
3. *Convergence Design* (Curran, 2003)
4. *Personal Websites: Top Designers Push The Boundaries with Experimental Design and Graphics* (Shepter, 2002)
5. *USED Browser 3.0: The Internet Design Project* (Burgoyne and Faber, 2001)
6. 'Recipe for a Successful Website', (Shedroff, 2001) – an online article containing examples of successful websites.

The list of awards referred to were:

1. Interactive Media Design Review 2002 & 2001 Awards (www.idonline.com/imdr02/, www.idonline.com/imdr01/)
2. Communication Arts Interactive Annual 2003 & 2002 (www.commarts.com/ca/interactive_d/cai03, www.commarts.com/ca/interactive_d/cai02/)
3. British Interactive Media Association (BIMA) 2003 & 2002 Awards (www.bima.co.uk/content_awards/last_year.html, www.bima.co.uk/content_awards/2002winners.html)
4. Design Week Annual Awards 2002 & 2001

3.1.2.2 Collating the Design Projects

Web-based projects were explored and tested online. Non-live projects such as CD-ROM or kiosk-based projects had to be explored offline. Where possible, the study tried to obtain an actual copy of the project. When this was not possible, the study has had to rely on analysis based on written descriptions and visual examples from other external sources.

3.1.2.3 List of General Design Criteria

A list of general design criteria was drawn up for the purpose of selecting and analysing the design projects. This list is a combination of critical criteria identified by Jakob Nielsen (2000b) and

Nathan Shedroff (1994) relating to the development and selection of successful websites. Two items were omitted from Shedroff's list. They were issues about the performance of web page download times and browser compatibility. Whilst these two items were important criteria for benchmarking well-designed sites, they were not specifically relevant to the objectives of this design application review. Additionally, even though the projects were not all web-based, it was considered that there were enough similarities between the other interactive media to apply the same criteria. The projects selected for analysis were evaluated against these key criteria:

1. Content
2. Organization and navigation
3. Visual design
4. Interactivity (feedback and control, creativity and productivity, communications, adaptivity)

Content

Content should be written specifically for the medium and its targeted audience. Not only must the content be chosen carefully, but the way it is written and structured is crucial to its success. Nielsen (2000a, p.101) lists three main guidelines for writing web content:

1. Be succinct and write no more than 50% of the text that would have been used for a print publication.
2. Write for scannability. Long paragraphs should be avoided; instead use subheadings and bulleted lists.
3. Hypertext should be used to split up long information into multiple pages.

This review assessed the quality of a project's content by its structure, delivery style, length and suitability for its targeted audience and medium.

Organization and Navigation

According to Nielsen (2000a), navigation interfaces should provide answers to three fundamental questions of navigation:

1. Where am I?
2. Where have I been?
3. Where can I go?

Where am I?

The organization of a site's content needs to be logical and clear to users. Users must be able to orientate easily within the site structure using the available interfaces. Users should always be provided with visual navigation clues as to where they are within the site structure.

Where have I been?

Users should be given visual clues as to which page they have visited to aid orientation and also to encourage familiarisation with the site structure.

Where can I go?

A well-designed site should allow users to view several levels of data hierarchy at the same time. This is particularly useful in sites where the content is complex and layered. Users should also be given the option to jump between content levels without having to move back sequentially through each one. Additionally, there must be a clear demarcation of different levels of content and its sub-content.

Visual Design

The visual style of a project will set the tone and atmosphere of the user experience. For corporate sites, the visual look and style of the content is mostly dependent on its corporate identity and brand image. Visual design is not only concerned with creating an aesthetic value, but also with delivering the appropriate message. The design, application and choice of the navigational interface, graphics, icons, animations, videos, typefaces and colours will contribute to the overall design of the project.

Interactivity (Feedback and Control, Creativity and Productivity, Communications, Adaptivity)

The level of interaction appropriate for a project is dependent on its aims and context of use. For example, a corporate website requires substantially less interaction than an online chat website. Therefore, deciding upon and implementing an appropriate level of interaction becomes an important design decision. Laurel (1993, p.20-21) presents interactivity as a continuum that can be characterized by three variables:

1. Frequency – how often a user can interact with the system
2. Range – how many choices are available to the user
3. Significance – how much the choices really affect matters

Using these criteria, a low degree of interactivity can be characterized by very little interaction between the user and system and with what few choices a user has, only make slight differences to the outcome. However, a high degree of interactivity is characterized by frequent interaction with many choices that will significantly influence the outcome.

Additionally, Shedorff (1994) identifies four aspects of interactivity: feedback and control, creativity and productivity, communications, and adaptivity. These groupings were useful to analyse the type of interaction common in current projects.

Feedback and Control

The level of feedback and control available to users should be sufficiently considered for the purpose of the site. The system should be designed to deliver appropriate feedback (visual or audio) to the user. On most sites, users prefer to have some degree of control over what they see and in which sequence they see it. Generally, experiences with high interactivity will offer high levels of feedback and control, for example in role-playing games.

Creativity and Productivity

In his list, Shedorff combines 'creativity and productivity' as meaning the same thing. Both of these terms refer to tools that allow users to create and share new experiences or objects on the site.

Communications

The act of communication is one of the most significant human attributes. The digital medium is well suited to facilitating user-to-user interaction, ranging from personal communication to multi-user communication through virtual communities.

Adaptivity

Nathan Shedorff mentions that 'the most valuable interactive experiences are those that are adaptive' (1994). These experiences must be able to adapt and respond to the different needs, interests, skills and knowledge of individual users. Creating a 'personalized' experience will help enhance the user's interactive experience.

3.1.2.4 List of Typographic Application Criteria

In addition to the general design criteria, a second set of criteria was drawn up to assess the quality and usage of typography in the two sets of design projects (type-based and non type-based). This list sought to identify the quality of type application against these four purposes:

1. Type as text
2. Type as navigation
3. Type as expression
4. Type as experimentation

Type as Text

Type used as text. This can come in the form of a headline or paragraphs of text.

Type as Navigation

Type used as hypertext links. This is different from links, which are icon or image-based. Text links may be made up of a system font or represented by an image of a font.

Type as Expression

Type is used as an expressive element in design. This can come in the form of animated type or the creative placement of letterforms to generate an expressive and meaningful message.

Type as Experimentation

Type used as the main or part of an experimental element.

References

Bruinsma, M. (2003) *Deep sites: Intelligent innovation in contemporary web design.* Thames and Hudson.

Burgoyne, P. & Faber, L. (2001) *Browser 3.0: The internet design project: Used.* London: Laurence King.

Crowston, K. & Williams, M. (1997) 'Reproduced and emergent genres of communication on the world-wide web', *30th Annual Hawaii International Conference on System Sciences.* Vol. 6. Maui, Hawaii, January 7-10, IEEE Computer Press, pp. 30-39.

Curran, S. (2003) *Convergence design: Creating the user experience for interactive television, wireless and broadband.* Massachusetts: Rockport.

Dewdney, N., VanEss-Dykema, C. & MacMillan, R. (2001) 'The form is the substance: Classification of genres in text', *ACL Workshop on Human Language Technology and Knowledge Management.* Toulouse, France, 6-7 July,

Dewe, J., Karlgren, J. & Bretan, I. (1998) 'Assembling a balanced corpus from the internet', *11th Nordic Conference on Computational Linguistics.* Copenhagen, Denmark, 28-29 January,

Dillon, A. & Gushrowski, B. (2000) 'Genres and the web: Is the personal home page the first uniquely digital genre?' *Journal of the American Society for Information Science,* 51, (2), pp. 202-205.

Jupitermedia (2006) *Webopedia: Online dictionary for computer and internet technology.* Available at: http://www.webopedia.com (Accessed: 22 September 2003).

Laurel, B. (1993) *Computers as theatre.* Reading, Massachusetts: Addison-Wesley.

MacDonald, N. (2003) *What is web design.* Switzerland: RotoVision.

Nielsen, J. (2000a) *Designing web simplicity.* Indiana, US: New Riders Publishing.

Nielsen, J. (2000b) *End of web design.* Available at: http://www.useit.com/alertbox/20000723.html (Accessed: 22 September 2003).

Pite, S. (2003) *The digital designer: 101 graphic design projects for print, the web, multimedia and motion graphics.* New York: Thomson Delmar Learning.

Roussinov, D., Crowston, K., Nilan, M., Kwasnik, B., Cai, J. & Liu, X. (2001) 'Genre based navigation on the web', *34th Annual Hawaii International Conference on System Sciences.* Maui, Hawaii, 3-6 January, IEEE Computer Press, pp. 4013-4023.

Shedroff, N. (1994) *Recipe for a successful website.* Available at: http://www.nathan.com/thoughts/recipe/content.html (Accessed: 22 September 2003).

Shedroff, N. (2001) *Experience design 1.* Indiana, US: New Riders.

Shepherd, M. & Watters, C. (1999) 'The functionality of cybergenres', *32nd Hawaiian International Conference on System Sciences.* Maui, Hawaii, 5-8 January, IEEE Computer Press, pp. 2007-2016.

Shepter, J. (2002) *Personal web sites.* Gloucester, MA: Rockport.

Van Duyne, D. K., Landay, J. & Hong, J. I. (2003) *The design of sites.* Boston: Addison-Wesley.

Wands, B. (2002) *Digital creativity.* New York: John Wiley and Sons, Inc.

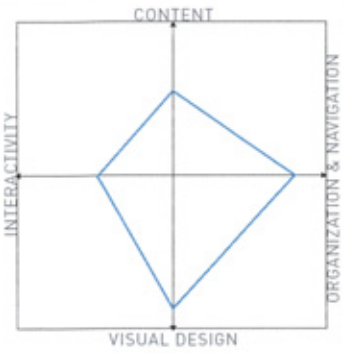
Wiedemann, J. (2003) *Taschen's 1000 favorite websites.* Cologne: Taschen.

World Wide Web Consortium (2002) *User agent accessibility guidelines 1.0: Glossary.* Available at: http://www.w3.org/TR/UAAG10/glossary.html#I (Accessed: 29 October 2003).

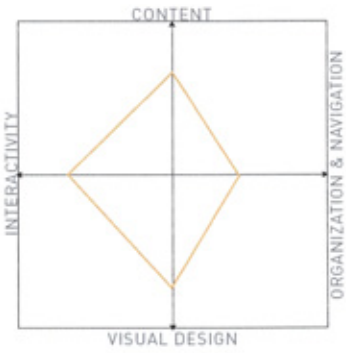
3.2 General Design Analysis Evaluation Plots

Categories 1-3: Portal, E-Zine and News

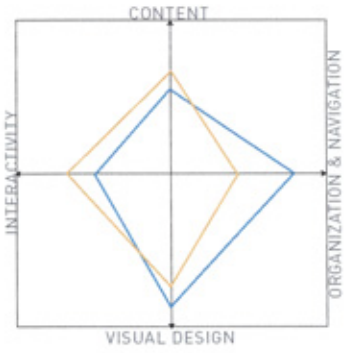
PORTAL



www.typographi.ca

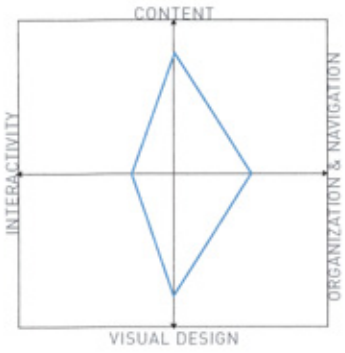


www.k10k.net

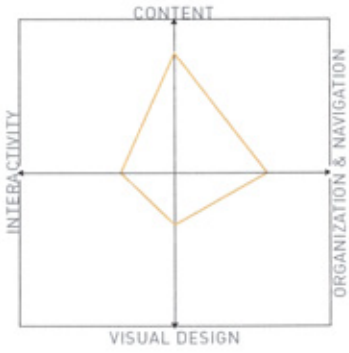


Comparison

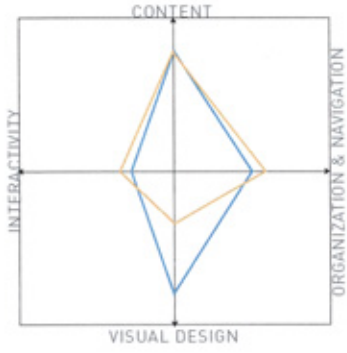
E-ZINE



www.mediamatic.net

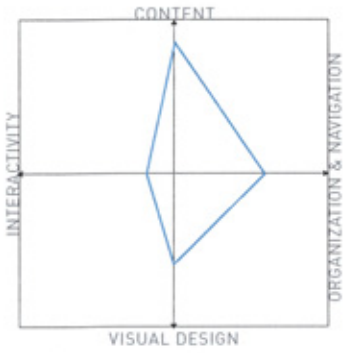


www.wired.com

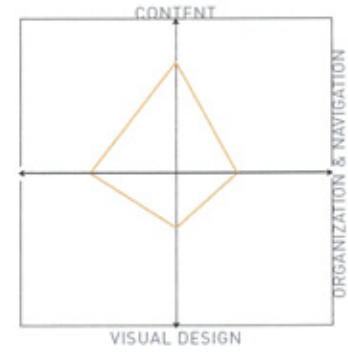


Comparison

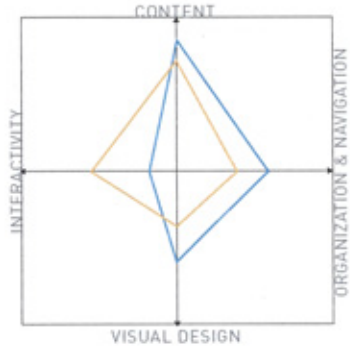
NEWS



news.bbc.co.uk



Sky News Digital



Comparison

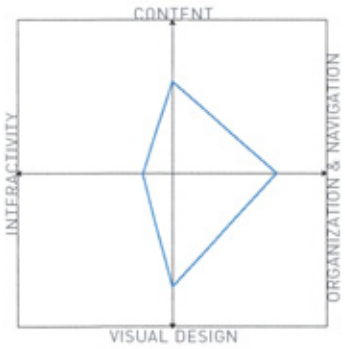
Type-Based Project

Non Type-Based Project

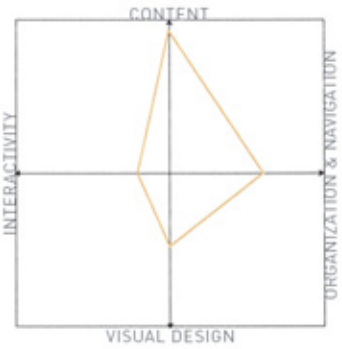
3.2 General Design Analysis Evaluation Plots

Categories 4-6: E-Commerce, Corporate Communications and NGO

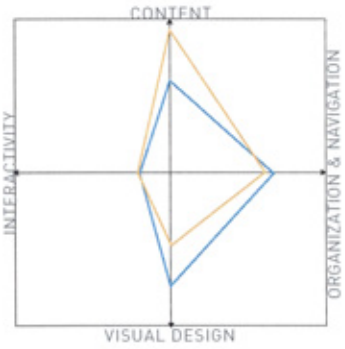
E-COMMERCE



www.lineto.com

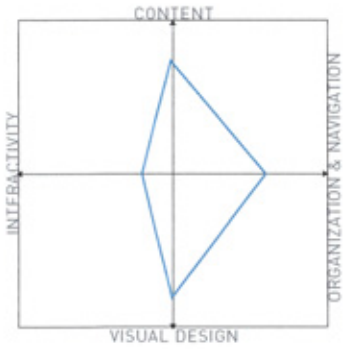


www.amazon.com

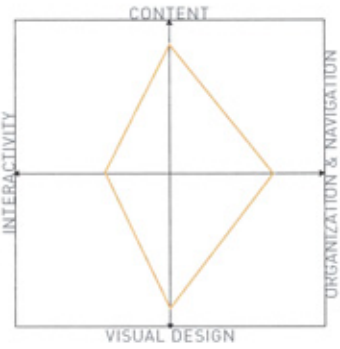


Comparison

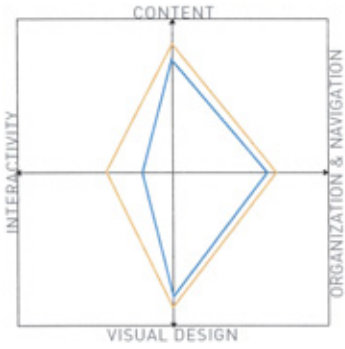
CORPORATE COMMUNICATION AND PROMOTION



www.fishcansing.com

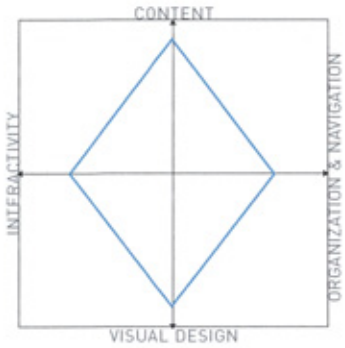


www.nike.com

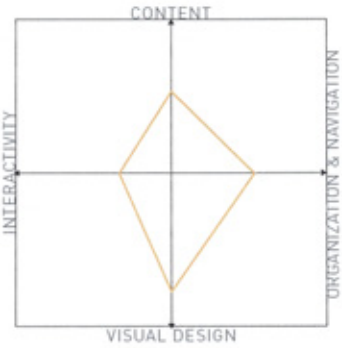


Comparison

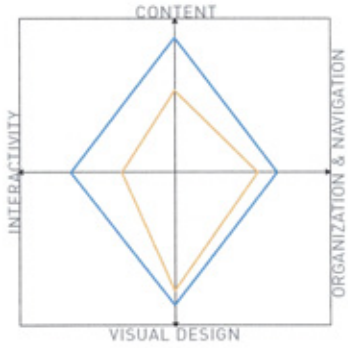
NON-GOVERMENTAL ORGANIZATIONS



www.randomaccessmemory.org



www.adbuster.org



Comparison

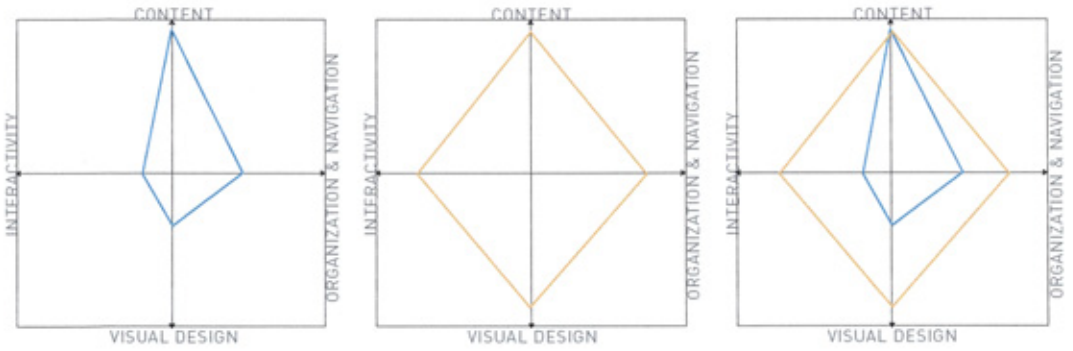
Type-Based Project

Non Type-Based Project

3.2 General Design Analysis Evaluation Plots

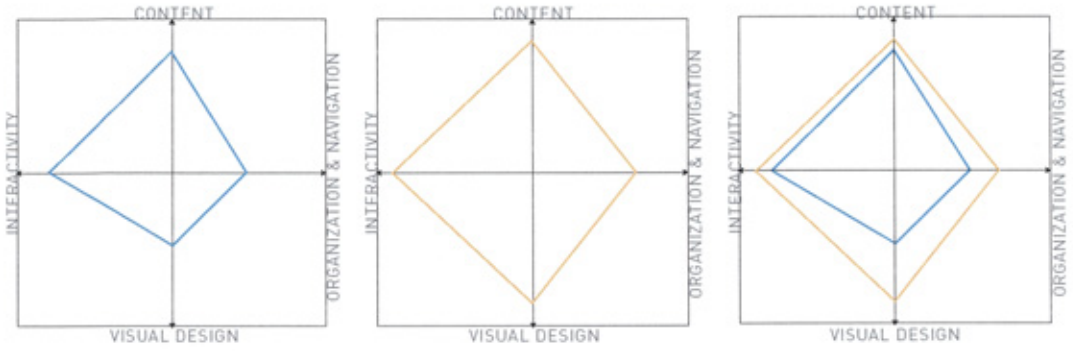
Categories 7-8: Government and Community

GOVERMENT



www.loc.gov www.nasa.gov **Comparison**

COMMUNITY



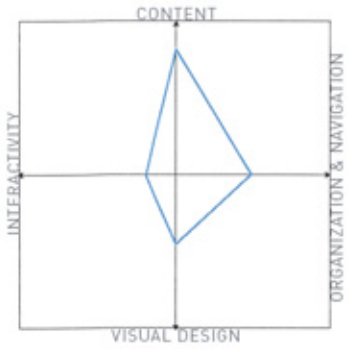
www.metafilter.com www.habbohotel.com **Comparison**

Type-Based Project Non Type-Based Project

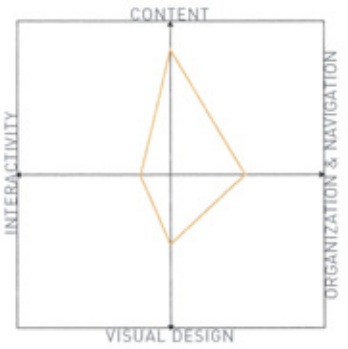
3.2 General Design Analysis Evaluation Plots

Categories 9-10: Entertainment and Education

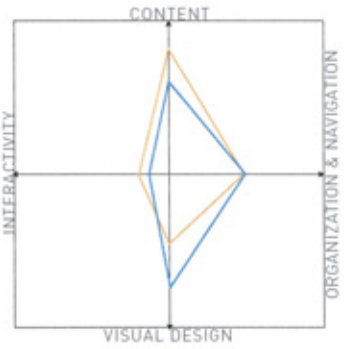
ENTERTAINMENT: WATCH



www.bemboszoo.com

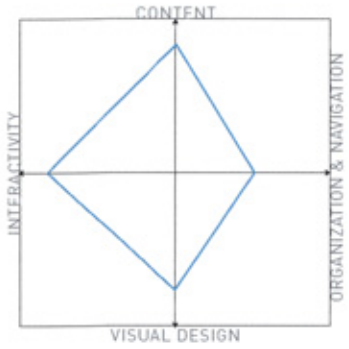


www.atomfilms.com

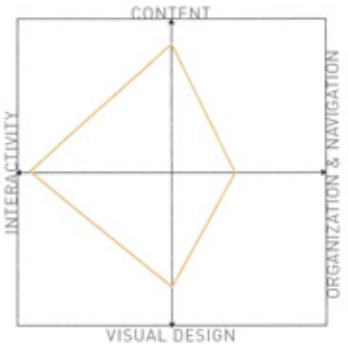


Comparison

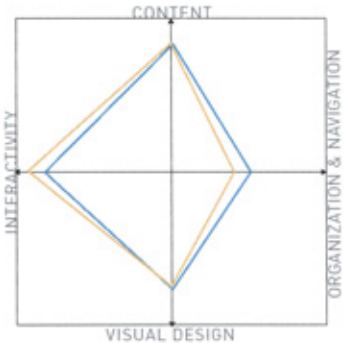
ENTERTAINMENT: PLAY



Alphabet Synthesis Machine

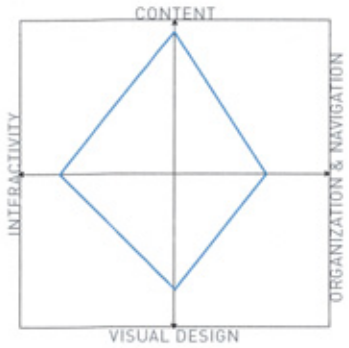


Unreal Tournament

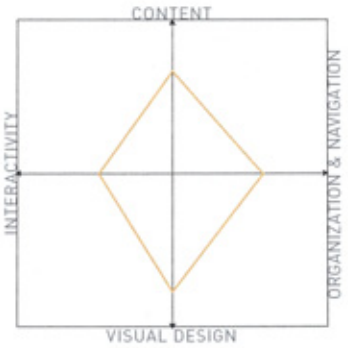


Comparison

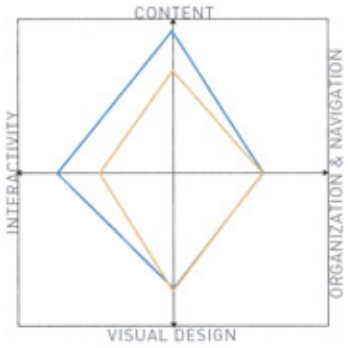
EDUCATION AND REFERENCE



www.visualthesaurus.com



Tesla Coil CD-ROM



Comparison

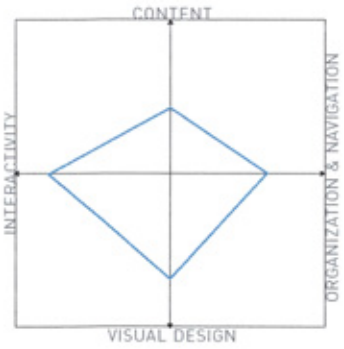
Type-Based Project

Non Type-Based Project

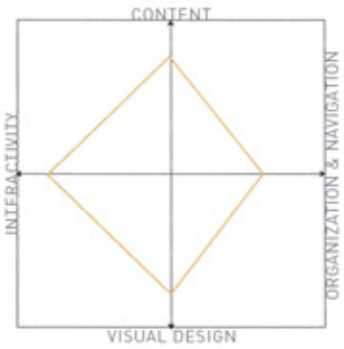
3.2 General Design Analysis Evaluation Plots

Categories 11-12: Experimental and Personal Home Pages

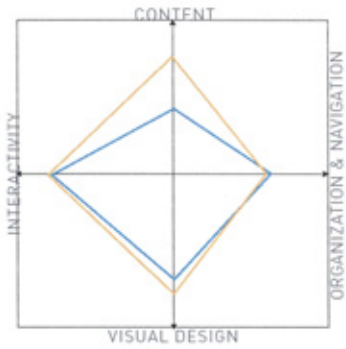
EXPERIMENTAL



www.beaufonts.com/psst

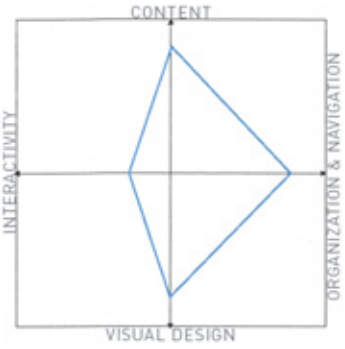


www.yugop.com

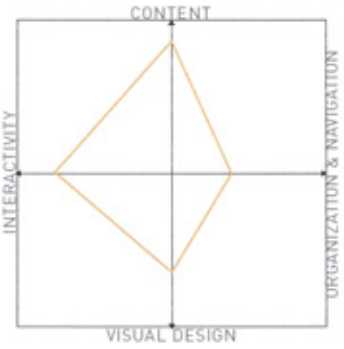


Comparison

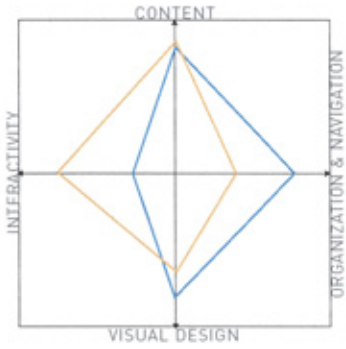
PERSONAL HOME PAGE



www.peterb.sk



www.nobodyhere.com



Comparison

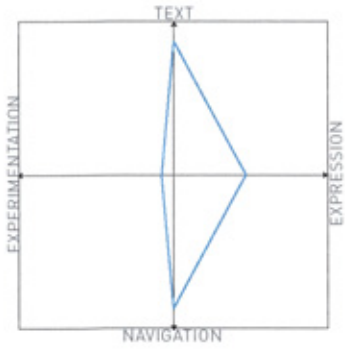
Type-Based Project

Non Type-Based Project

3.3 Typographic Application Analysis Evaluation Plots

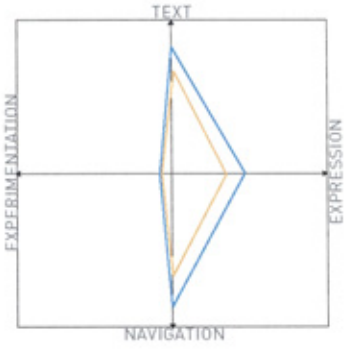
Categories 1-3: Portal, E-Zine and News

PORTAL



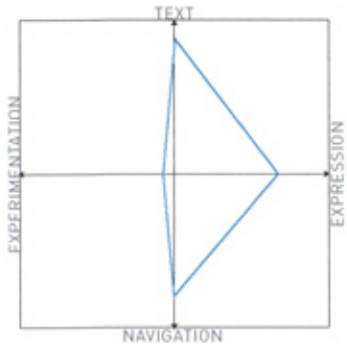
www.typographi.ca

www.k10k.net

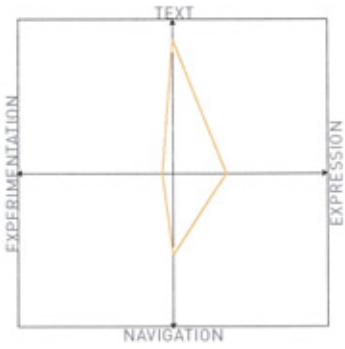


Comparison

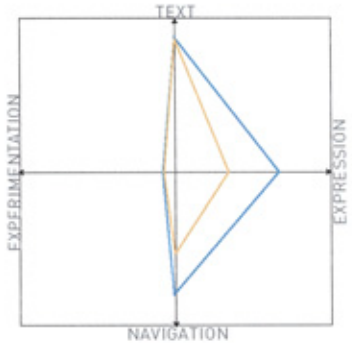
E-ZINE



www.mediamatic.net

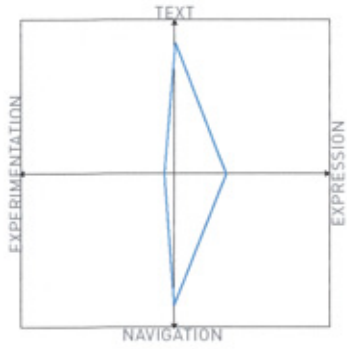


www.wired.com

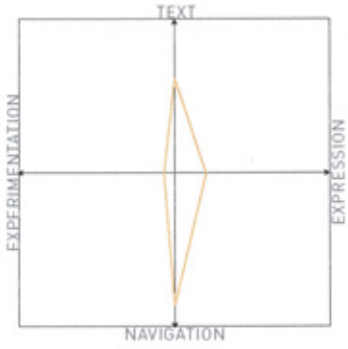


Comparison

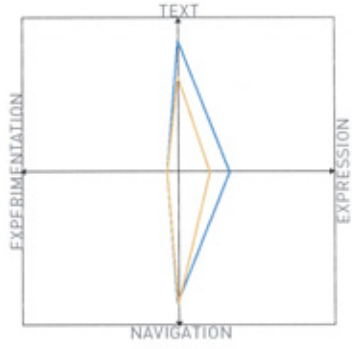
NEWS



news.bbc.co.uk



Sky News Digital



Comparison

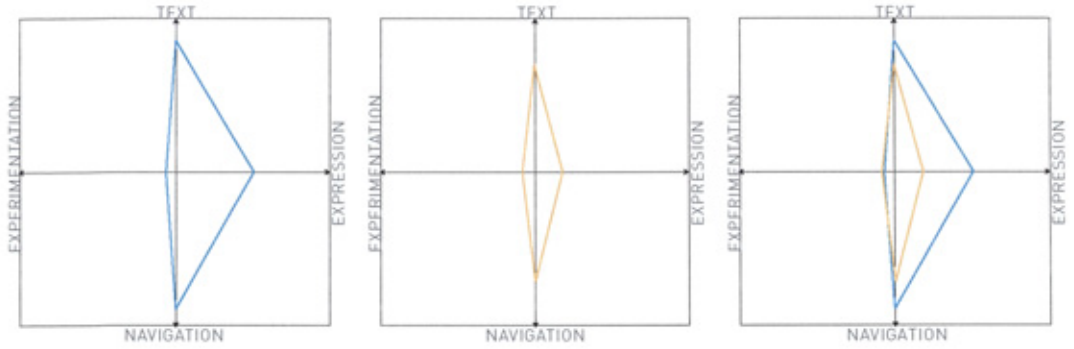
Type-Based Project

Non Type-Based Project

3.3 Typographic Application Analysis Evaluation Plots

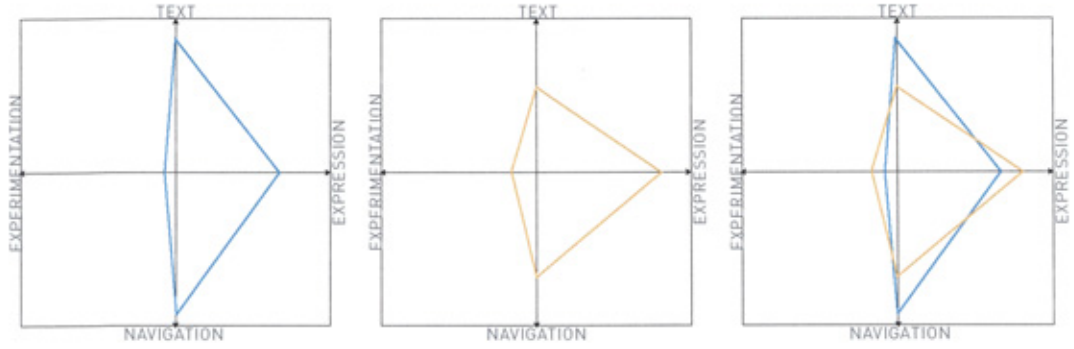
Categories 4-6: E-Commerce, Corporate Communications and NGO

E-COMMERCE



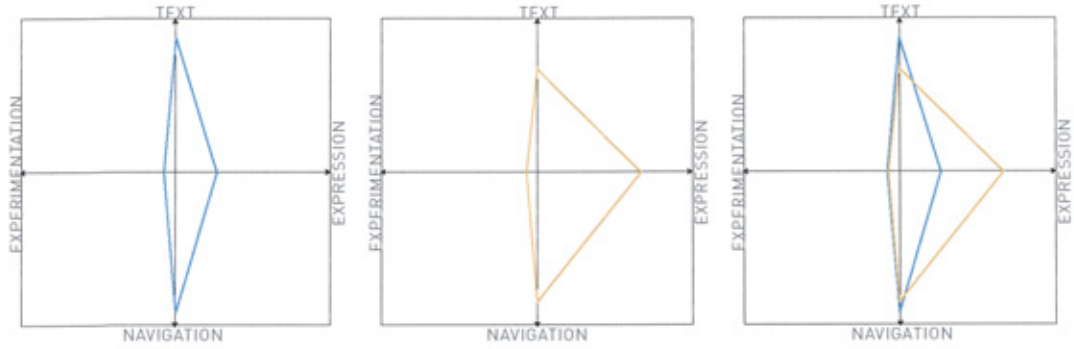
www.lineto.com www.amazon.com **Comparison**

CORPORATE COMMUNICATION AND PROMOTION



www.fishcansing.com www.nike.com **Comparison**

NON-GOVERMENTAL ORGANIZATIONS



www.randomaccessmemory.org www.adbuster.org **Comparison**

Type-Based Project Non Type-Based Project

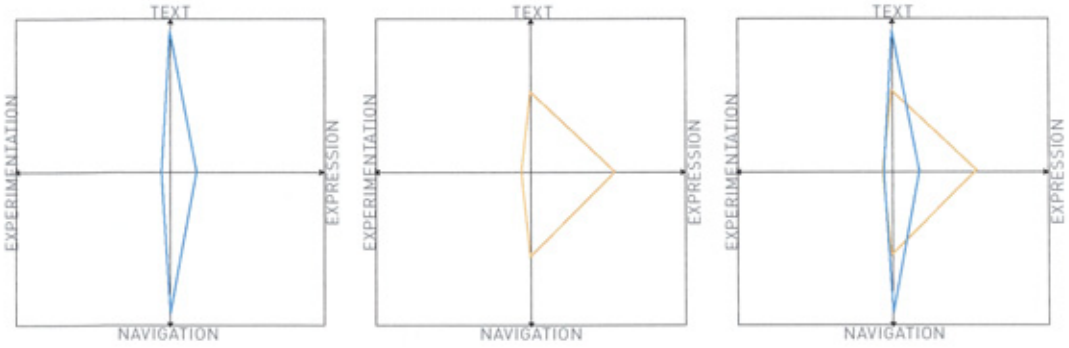
3.3 Typographic Application Analysis Evaluation Plots

Categories 7-8: Government and Community

GOVERMENT

www.loc.gov www.nasa.gov **Comparison**

COMMUNITY

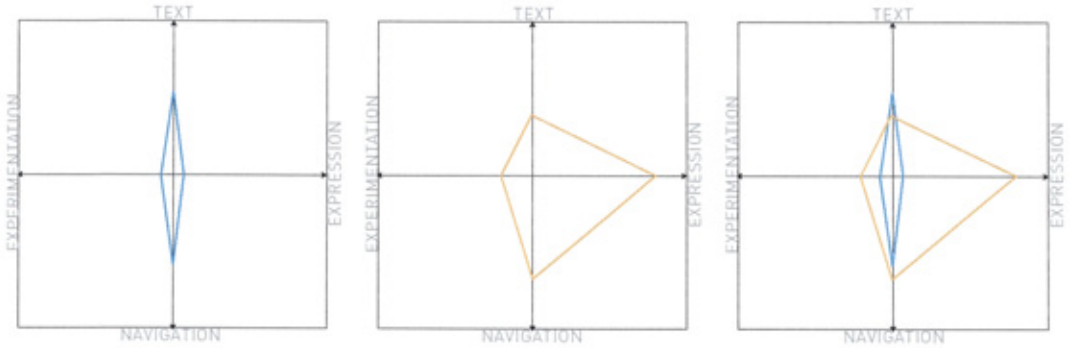


www.metafilter.com www.habbohotel.com **Comparison**

3.3 Typographic Application Analysis Evaluation Plots

Categories 9-10: Entertainment and Education

ENTERTAINMENT: WATCH

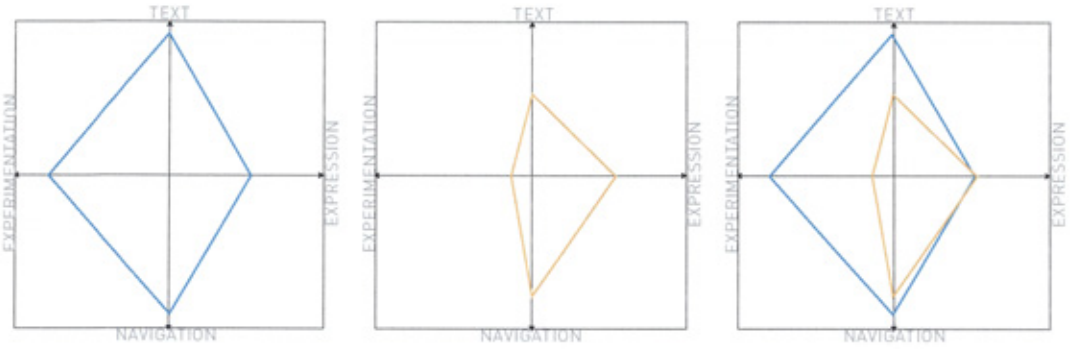


www.atomfilms.com | www.bemboszoo.com | **Comparison**

ENTERTAINMENT: PLAY

Alphabet Synthesis Machine | Unreal Tournament | **Comparison**

EDUCATION AND REFERENCE



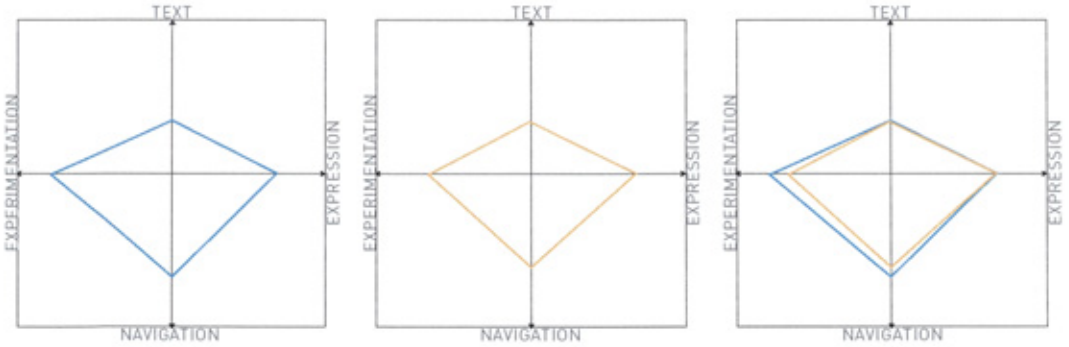
www.visualthesaurus.com | Tesla Coil CD-ROM | **Comparison**

Type-Based Project | Non Type-Based Project

3.3 Typographic Application Analysis Evaluation Plots

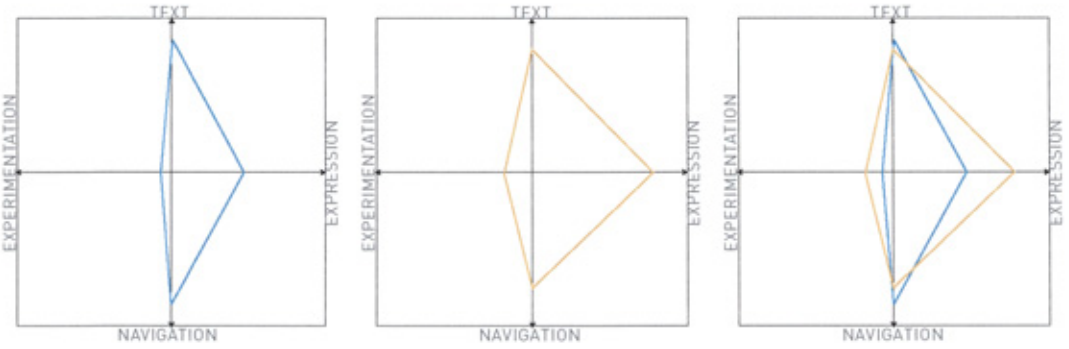
Categories 11-12: Experimental and Personal Home Pages

EXPERIMENTAL



www.beaufonts.com/psst www.yugop.com **Comparison**

PERSONAL HOME PAGE



www.peterb.sk www.nobodyhere.com/justme **Comparison**

Type-Based Project Non Type-Based Project

APPENDIX 4

4.1 Factors Considered During the Design of the Questionnaire Survey

4.1.2 Types of Questionnaire Design

According to May (2001) and Oppenheim (1992), there are generally four types of questionnaires used in surveys: the mail or self-completion questionnaire, the telephone survey, face-to-face interview and group-administered questionnaires. Oppenheim summarizes the advantages of mail surveys over other methods as:

1. Low cost of data collection
2. Low cost of processing
3. Avoidance of interviewer bias
4. Ability to reach respondents that live at widely dispersed addresses or are abroad

However, Oppenheim also cautions about the disadvantages of mail surveys, which he lists as:

1. Generally low response rate and consequent bias
2. Unsuitability for respondents for poor literacy[1]
3. No opportunity to correct misunderstanding or to probe
4. No control over the order in which the questions are answered, no check on incomplete responses, incomplete questionnaires or the passing on of questionnaires to others
5. No opportunity to collect ratings or assessments based on observation

These disadvantages were taken into consideration during the design of the questionnaire to ensure that they did not overly affect the quality of the data collected.

4.1.3 Distribution Method

De Vaus (2001) suggests that there are two broad ways in which Internet surveys are administered: They are:

1. Email
    a. Plain text questions inserted as part of an email
    b. An email message formatted in HTML
    c. A formatted questionnaire sent as an email attachment
    d. An interactive questionnaire in the form of an executable file that can be sent as an email
2. Web page

[1] This was not a factor in this study as the respondents were design professionals with an acceptable level of literacy.

Factors that determined the method of data collection in this study were:

1. Geographical location of the sample
2. The profession of the respondents
3. The level of technology-savvy
4. The size of sample required

Based on these factors, the Internet based method of data collection was applied. The final questionnaire was designed as a Portable Document Format (PDF) document, which can be viewed directly on-line from within the user's browser window or downloaded onto the user's computer and viewed from the Adobe Acrobat Reader® application. This format is widely used for the secure and reliable distribution and exchange of electronic documents and forms. The application required to view PDF documents is usually bundled together with popular Internet browsers like Microsoft's Internet Explorer®. If this is not available, users can easily download a free copy of the Adobe Acrobat Reader® software to view PDF documents. This format was chosen over a HTML format to reduce a perceived bias held by some designers over the lack of typographic control available in HTML pages. A PDF document allowed the study more control over how the questionnaire was designed and displayed.

4.1.4 Question Types

May (2001, p.103) explains that there are generally four kinds of survey questions. They are:

1. Classification Questions – 'personal' section of the questionnaire, often referred to as demographic or fact sheet information such as age, income, occupation and so on.
2. Open and Closed questions – according to Oppenheim (1992), 'closed' questions are ones where respondents are offered a choice of alternative replies. 'Open' questions are not followed by any kind of choice, and have their answers recorded in full.
3. Factual questions
4. Opinion questions – questions where the opinions of the respondent are being requested and recorded in full.

This questionnaire used a combination of closed, classification and open questions. Specifically, there were seventeen closed questions, seven classification questions and one open question. Closed questions were used to help determine the specific views of the respondents and to record their standpoint on the issues raised. Closed questions were also helpful in providing the respondent with a frame of reference to approach an issue. The questions were designed with a balance of positive and negative statements in order to guard against leading the respondents, as cautioned by Oppenheim (1992).

The chief advantage of open questions is the freedom they offer to respondents. If the question is clear and unambiguous, respondents will be able to express themselves in their own words and language (Visser et al., 2000). However, it is important to provide just the right amount of space to give an indication of how much the respondent should write. According to Oppenheim (1992), open questions are useful for testing hypotheses about ideas or awareness. Generally, open questions are difficult to analyse, hence the need to employ a classification process known as coding.

Data collected from the classification section provided information on the population composition of the sample group. Additionally, this information was used to determine if there were any differences in opinion between different sample groups. Brace (2004) and Hill et al (2003) recommend placing the classification section at the end of the questionnaire. Some participants may take offence to answering seemingly impertinent questions about age and profession; hence it is better to leave classification questions to the end.

4.1.5 Questionnaire Length

Much has been written about the ideal length of a questionnaire, but there is no concrete rule that can be applied. Whilst a view taken by Erdos and Morgan (1970) suggests that an eleven-page questionnaire can be considered a general maximum, Hall and Hall (1996) recommend that it should be between six to eight pages. Studies undertaken by Adams and Gale (1982), Social and Community Planning Research (1972) and Heberlein and Baumgartner (1978) found no correlation between response rates to questionnaire length. Therefore the length of a questionnaire is not the sole determining factor in the response rate. However, this study believed that a shorter questionnaire would be more advantageous in the context of the intended audience, due to the hectic nature of work undertaken by design educators and practitioners. The final version of the questionnaire consisted of six pages, with a total of twenty-five questions located in three sections, and was estimated to take a respondent twenty minutes to complete.

4.1.6 Attitude Scaling

An attitude scaling method was used for closed questions in the questionnaire. According to Oppenheim (1992), an attitude statement is a single sentence that expresses a point of view, a belief, a preference, a judgement, an emotional feeling, and a position for or against something. The statements were written with some principles in mind, namely wording principles laid out by De Vaus (2001). He mentions that the language used should not be complex; the question must not be double-barreled, negative or leading.

De Vaus (2001) and Alreck and Settle (1995), describe four main types of measurement in attitude scaling:

1. Rating scales – this requires respondents to select one alternative from a set of ordered categories. This format can come in the style of:
    a. Likert Scales
    b. Numerical rating scales
    c. Feeling thermometers
    d. Score out of 10
    e. Semantic differential
2. Rankings – this requires respondents to rank a set of alternatives.
3. Checklist – this involves providing a list of items and asking the respondent to select all that apply to them.
4. Selecting between alternative attitude statements – describing alternative attitudes towards some matter and asking which of the attitudes is closest to their own.

4.1.7 Levels of Measurement

According to May (2001, p.109), there are generally three levels of measurement applicable to the social sciences:

1. *Nominal* – Rose and Sullivan (1996), explain that nominal measures are simply a way to say that 'each case is different from another – not bigger or smaller, better or worse, just different.
2. *Ordinal* – Ordinal variables are measures which rank the differences in replies, but do not provide a basis of measuring the amount of difference between them. The Likert Scale uses this level of measurement.
3. *Interval* – In Interval measurement, the units of measurement are real numbers and not category codes.

Rose and Sullivan (1996, p.19) also provide a useful example to illustrate the differences between the three levels of measurement:

1. A and B have different incomes (*property of a nominal measure*)
2. A has more income than B (*property of an ordinal measure*)
3. A has £10K p.a. more than B (*property of an interval measure*)

References

Adams, L. L. M. & Gale, D. (1982) 'Solving the quandary between questionnaire length and response rate in educational research', *Research in Higher Education*, 17, pp. 231-240.

Alreck, P. L. & Settle, R. B. (1995) *The survey research handbook: Guidelines and strategies for conducting a survey.* 2nd edn. New York: McGraw-Hill.

Brace, I. (2004) *Questionnaire design: How to plan, structure and write survey material for effective market research.* London: Kogan Page.

De Vaus, D. A. (2001) *Research design in social research.* London: SAGE.

Erdos, P. L. & Morgan, A. J. (1970) *Professional mail surveys.* New York: McGraw-Hill.

Hall, D. J. & Hall, I. M. (1996) *Practical social research: Project work in the community.* Basingstoke: Macmillan.

Heberlein, T. A. & Baumgartner, R. (1978) 'Factors affecting response rates to mailed questionnaires', *American Sociological Review*, 43, pp. 447-462.

Hill, N., Brierley, J. & MacDougall, R. (2003) *How to measure customer satisfaction.* Hampshire: Gower Publishing Ltd.

May, T. (2001) *Social research: Issues, methods and process.* 3rd edn. Buckingham: Open University Press.

Oppenheim, A. N. (1992) *Questionnaire design, interviewing and attitude measurement.* 2nd edn.: Pinter Publishers.

Rose, D. & Sullivan, O. (1996) *Introducing data analysis for social scientists.* 2nd edn. Buckingham: Open University Press.

Social and Community Planning Research (1972) *Postal survey methods.* London: SCPR.

Visser, P. S., Krosnick, J. A. & Lavrakas, P. J. (2000) 'Survey research', in Reis, H. T. (ed.) *Handbook of research methods in social and personality psychology.* Cambridge: Cambridge University Press, pp. 223-252.

4.2 Questionnaire Form: Introduction Page

The questionnaire has an introduction page to explain the aim of the questionnaire and to state confidentiality terms.

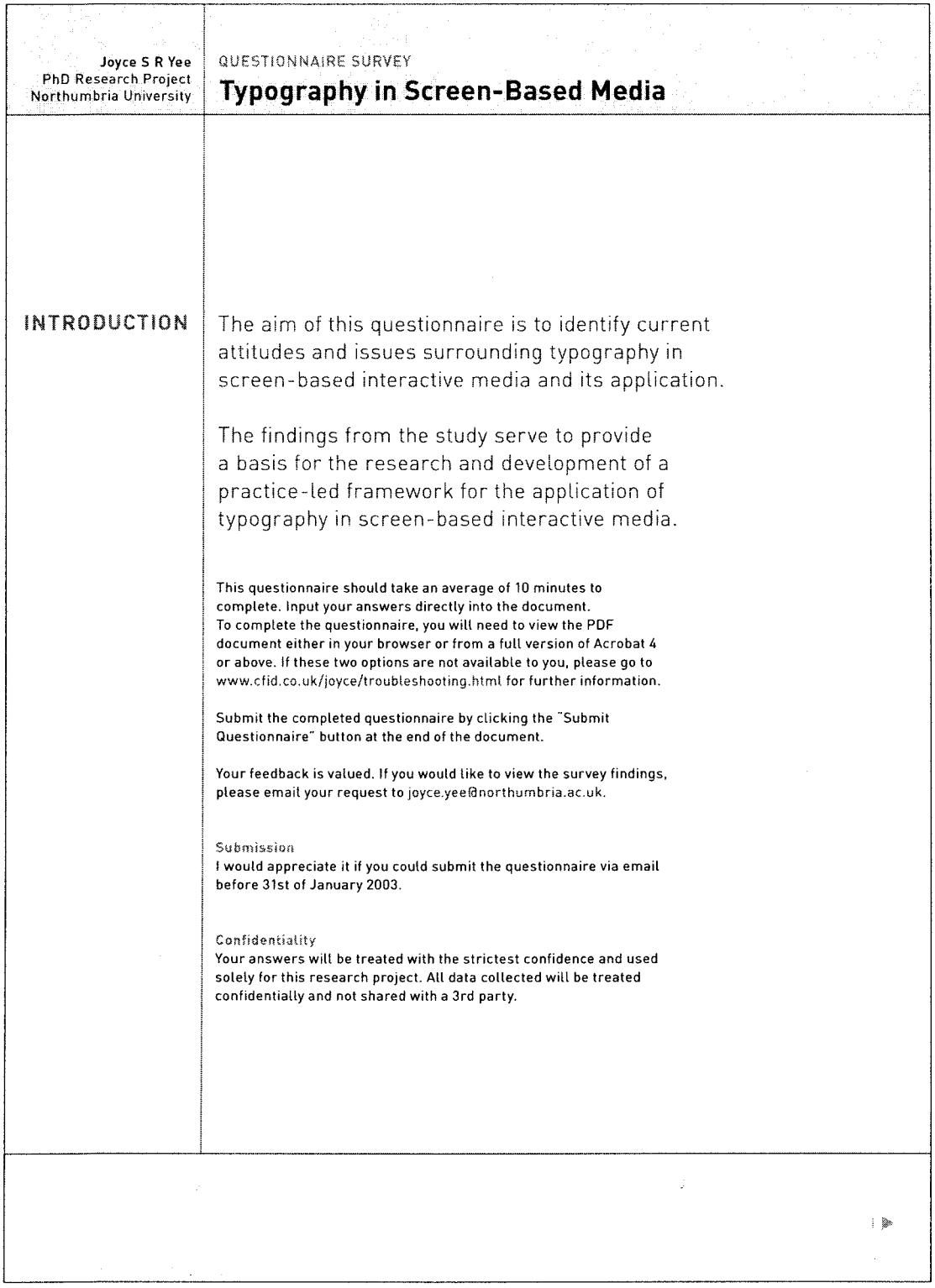
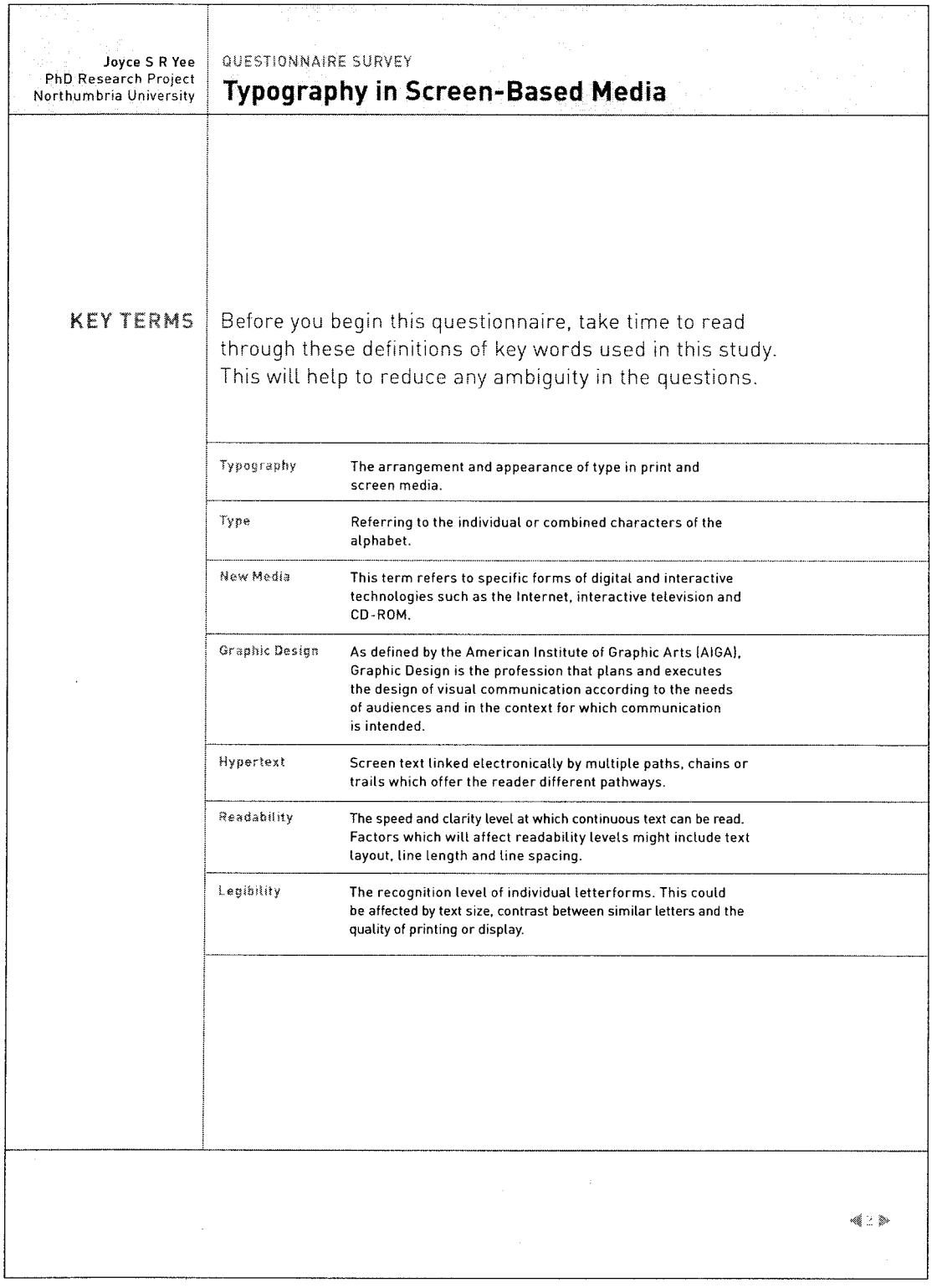


Figure 4.1 Questionnaire Introduction Page

4.2 Questionnaire Form: Definition Page

Definitions of key words used in the questionnaire are listed after the Introduction page.



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QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

KEY TERMS

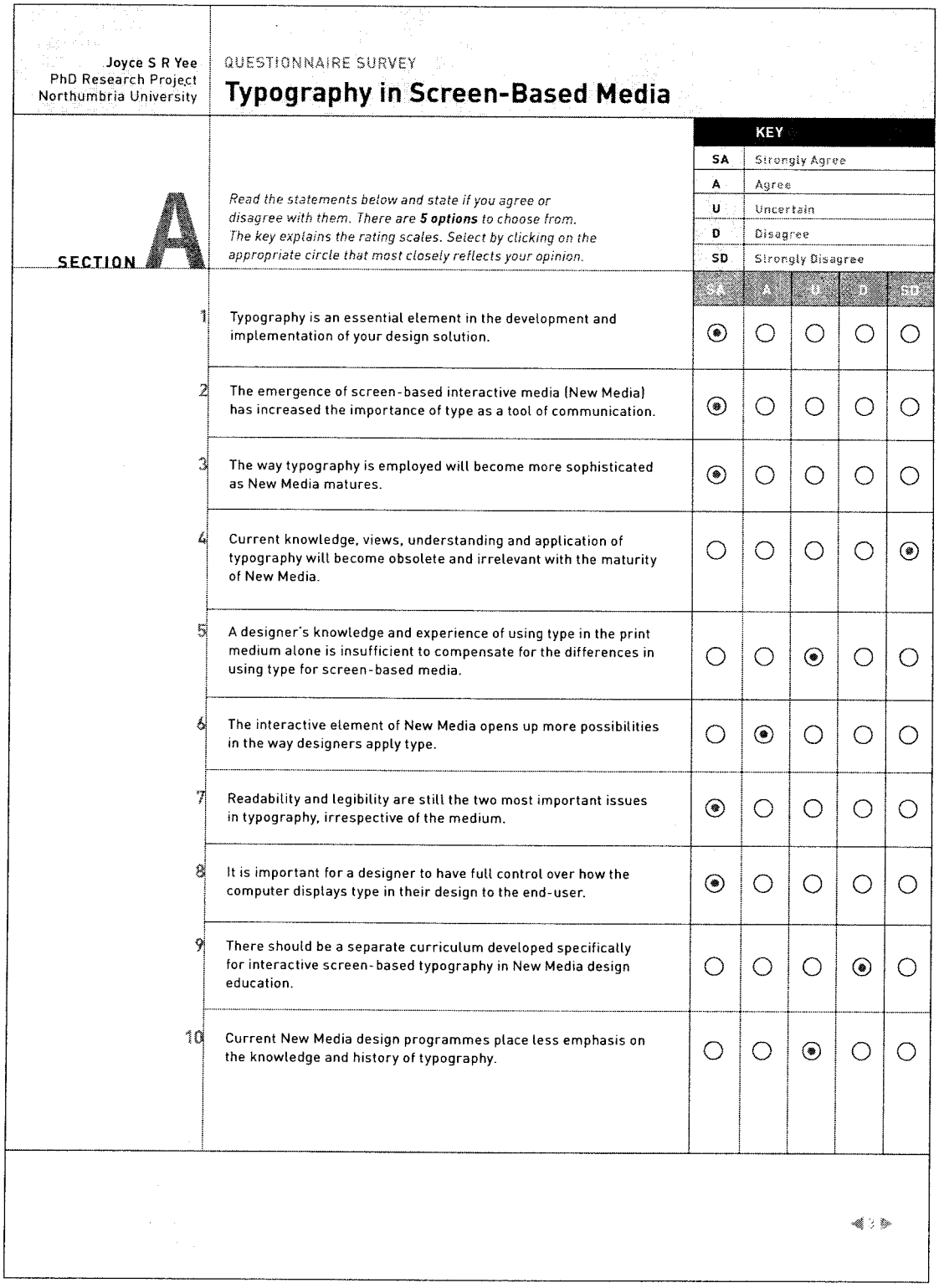
Before you begin this questionnaire, take time to read through these definitions of key words used in this study. This will help to reduce any ambiguity in the questions.

Typography	The arrangement and appearance of type in print and screen media.
Type	Referring to the individual or combined characters of the alphabet.
New Media	This term refers to specific forms of digital and interactive technologies such as the Internet, interactive television and CD-ROM.
Graphic Design	As defined by the American Institute of Graphic Arts (AIGA), Graphic Design is the profession that plans and executes the design of visual communication according to the needs of audiences and in the context for which communication is intended.
Hypertext	Screen text linked electronically by multiple paths, chains or trails which offer the reader different pathways.
Readability	The speed and clarity level at which continuous text can be read. Factors which will affect readability levels might include text layout, line length and line spacing.
Legibility	The recognition level of individual letterforms. This could be affected by text size, contrast between similar letters and the quality of printing or display.

Figure 4.2 Questionnaire Definitions Page

4.3 Respondent Sample 1

A selection of answers collected in the questionnaire is presented in the subsequent pages.



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QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION A

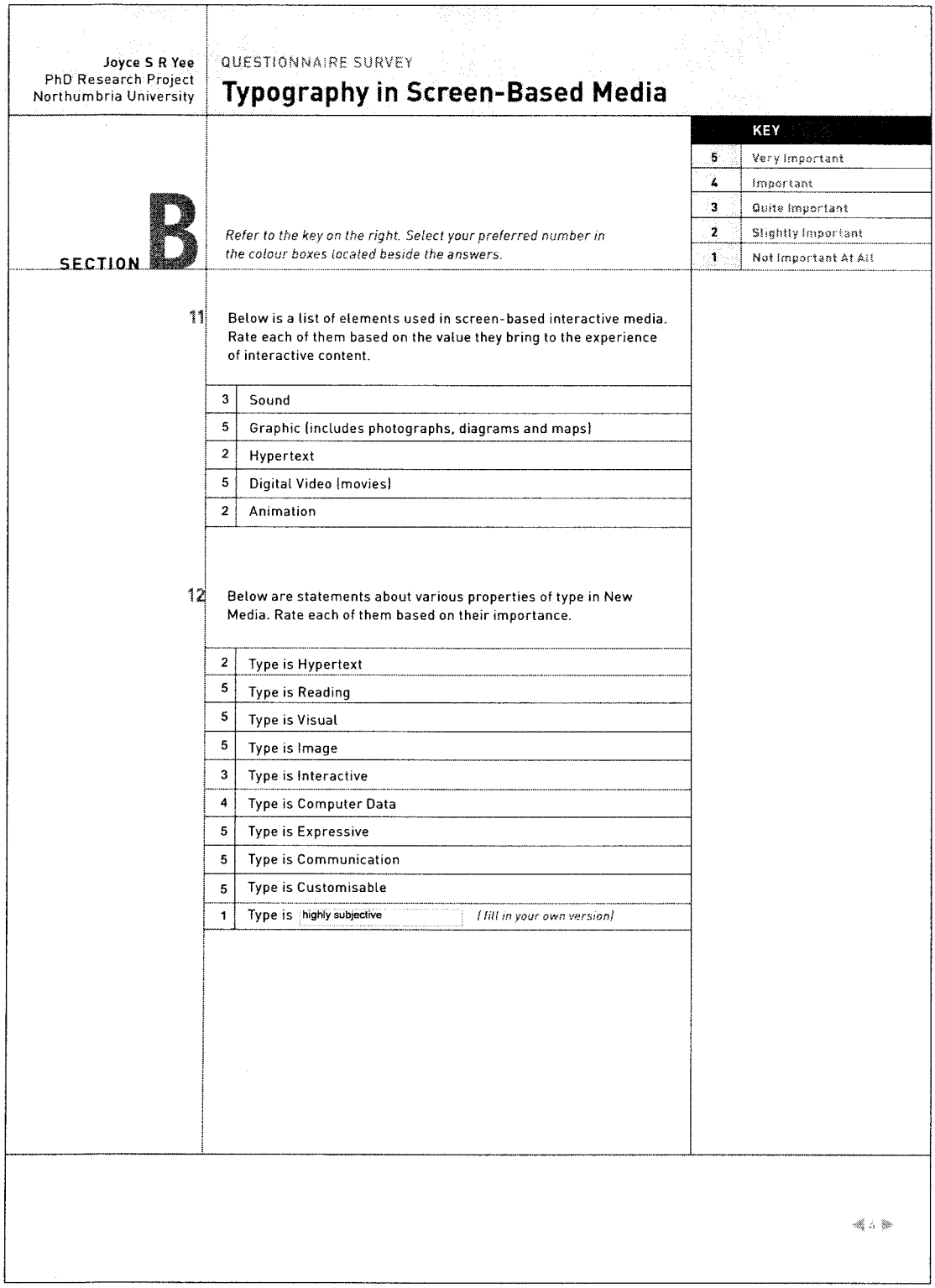
*Read the statements below and state if you agree or disagree with them. There are **5 options** to choose from. The key explains the rating scales. Select by clicking on the appropriate circle that most closely reflects your opinion.*

KEY	
SA	Strongly Agree
A	Agree
U	Uncertain
D	Disagree
SD	Strongly Disagree

		SA	A	U	D	SD
1	Typography is an essential element in the development and implementation of your design solution.	◉	○	○	○	○
2	The emergence of screen-based interactive media (New Media) has increased the importance of type as a tool of communication.	◉	○	○	○	○
3	The way typography is employed will become more sophisticated as New Media matures.	◉	○	○	○	○
4	Current knowledge, views, understanding and application of typography will become obsolete and irrelevant with the maturity of New Media.	○	○	○	○	◉
5	A designer's knowledge and experience of using type in the print medium alone is insufficient to compensate for the differences in using type for screen-based media.	○	○	◉	○	○
6	The interactive element of New Media opens up more possibilities in the way designers apply type.	○	◉	○	○	○
7	Readability and legibility are still the two most important issues in typography, irrespective of the medium.	◉	○	○	○	○
8	It is important for a designer to have full control over how the computer displays type in their design to the end-user.	◉	○	○	○	○
9	There should be a separate curriculum developed specifically for interactive screen-based typography in New Media design education.	○	○	○	◉	○
10	Current New Media design programmes place less emphasis on the knowledge and history of typography.	○	○	◉	○	○

Figure 4.3 Sample Questionnaire 1: Page 1

4.3 Respondent Sample 1



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QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

SECTION **B**

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

11 Below is a list of elements used in screen-based interactive media. Rate each of them based on the value they bring to the experience of interactive content.

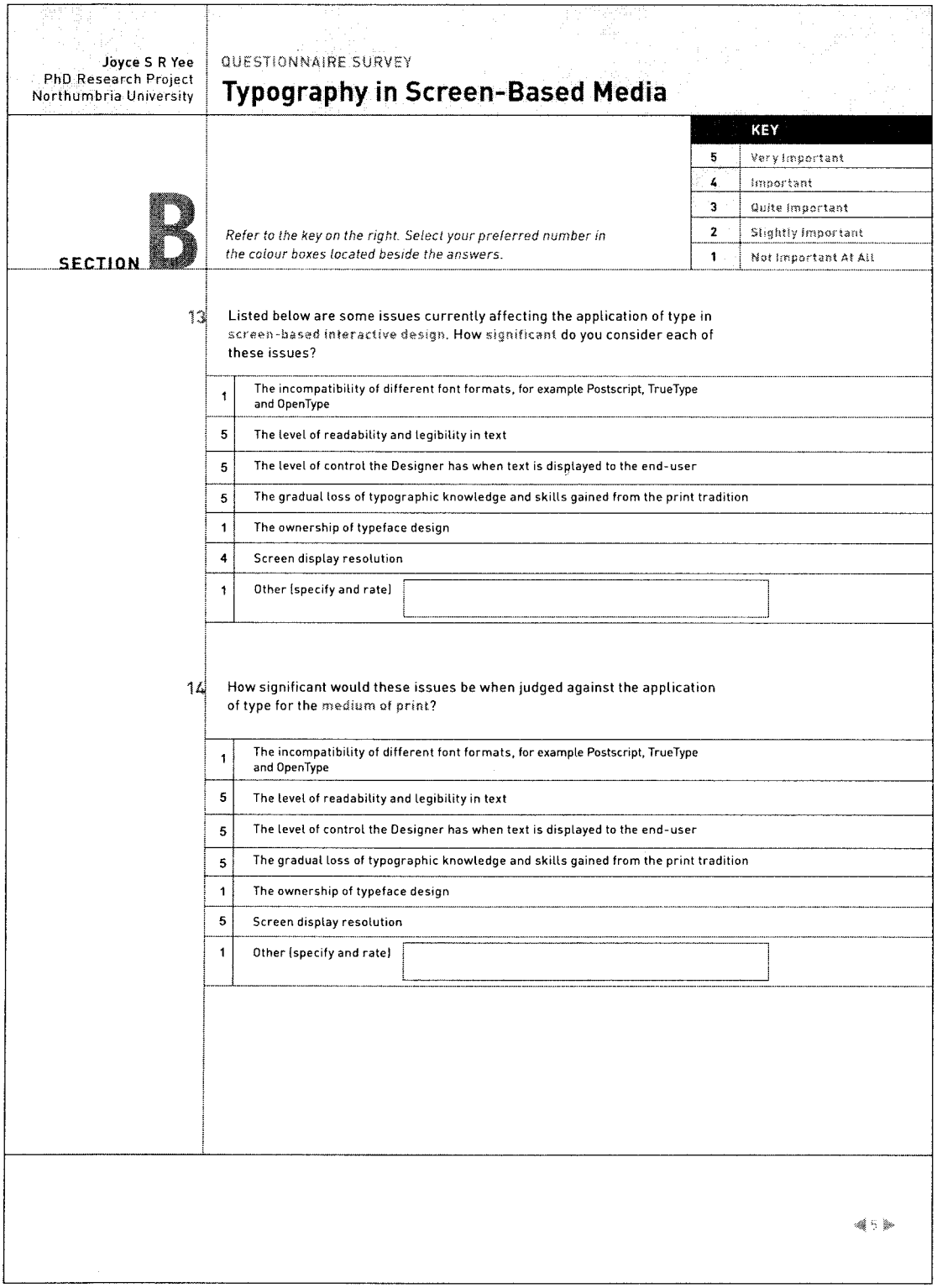
3	Sound
5	Graphic (includes photographs, diagrams and maps)
2	Hypertext
5	Digital Video (movies)
2	Animation

12 Below are statements about various properties of type in New Media. Rate each of them based on their importance.

2	Type is Hypertext
5	Type is Reading
5	Type is Visual
5	Type is Image
3	Type is Interactive
4	Type is Computer Data
5	Type is Expressive
5	Type is Communication
5	Type is Customisable
1	Type is highly subjective *(fill in your own version)*

Figure 4.4 Sample Questionnaire 1: Page 2

4.3 Respondent Sample 1



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QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

SECTION **B**

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

13 Listed below are some issues currently affecting the application of type in screen-based interactive design. How significant do you consider each of these issues?

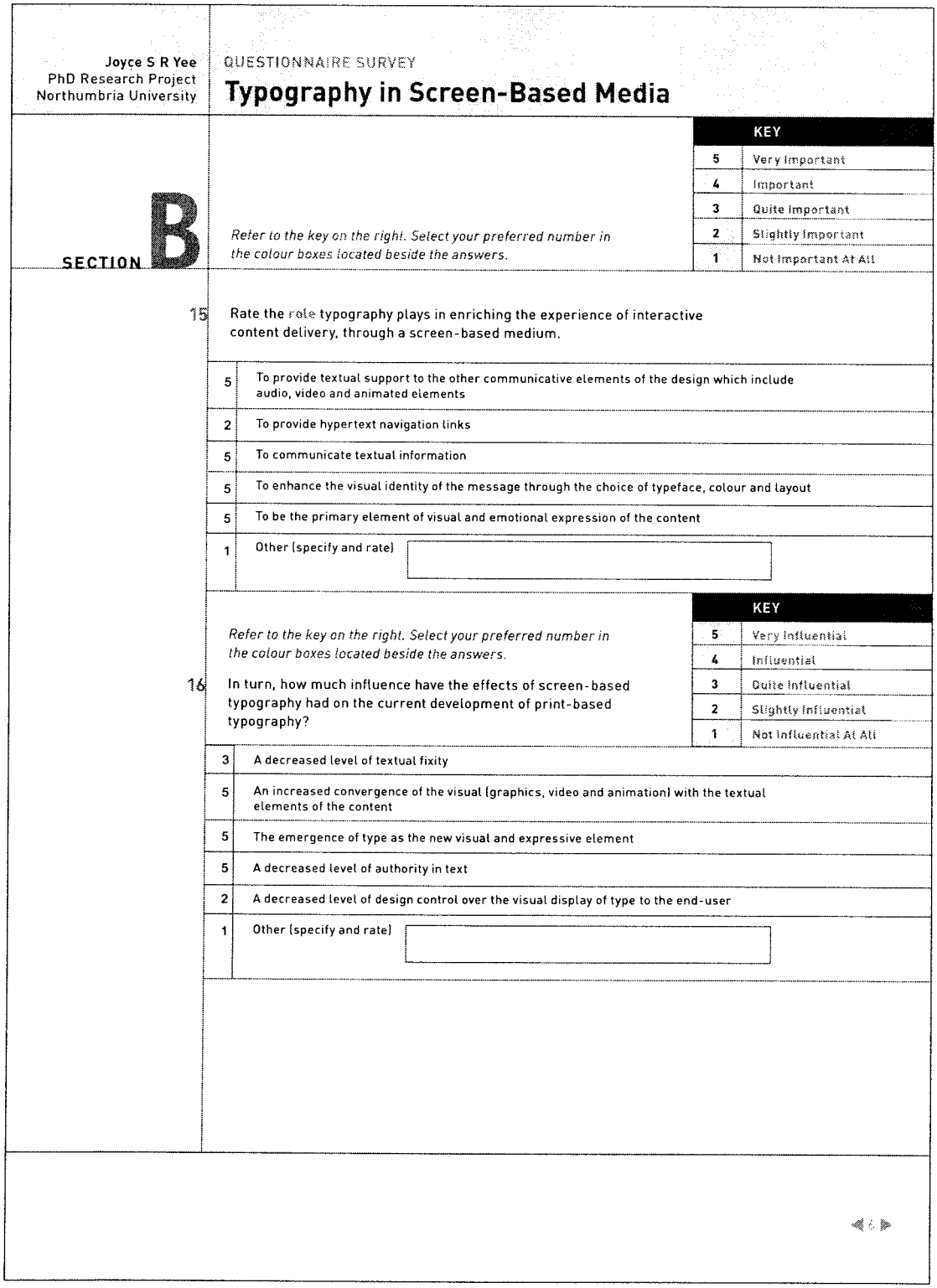
1	The incompatibility of different font formats, for example Postscript, TrueType and OpenType
5	The level of readability and legibility in text
5	The level of control the Designer has when text is displayed to the end-user
5	The gradual loss of typographic knowledge and skills gained from the print tradition
1	The ownership of typeface design
4	Screen display resolution
1	Other (specify and rate)

14 How significant would these issues be when judged against the application of type for the medium of print?

1	The incompatibility of different font formats, for example Postscript, TrueType and OpenType
5	The level of readability and legibility in text
5	The level of control the Designer has when text is displayed to the end-user
5	The gradual loss of typographic knowledge and skills gained from the print tradition
1	The ownership of typeface design
5	Screen display resolution
1	Other (specify and rate)

Figure 4.5 Sample Questionnaire 1: Page 3

4.3 Respondent Sample 1



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QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION **B**

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

15 Rate the role typography plays in enriching the experience of interactive content delivery, through a screen-based medium.

5	To provide textual support to the other communicative elements of the design which include audio, video and animated elements
2	To provide hypertext navigation links
5	To communicate textual information
5	To enhance the visual identity of the message through the choice of typeface, colour and layout
5	To be the primary element of visual and emotional expression of the content
1	Other (specify and rate)

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

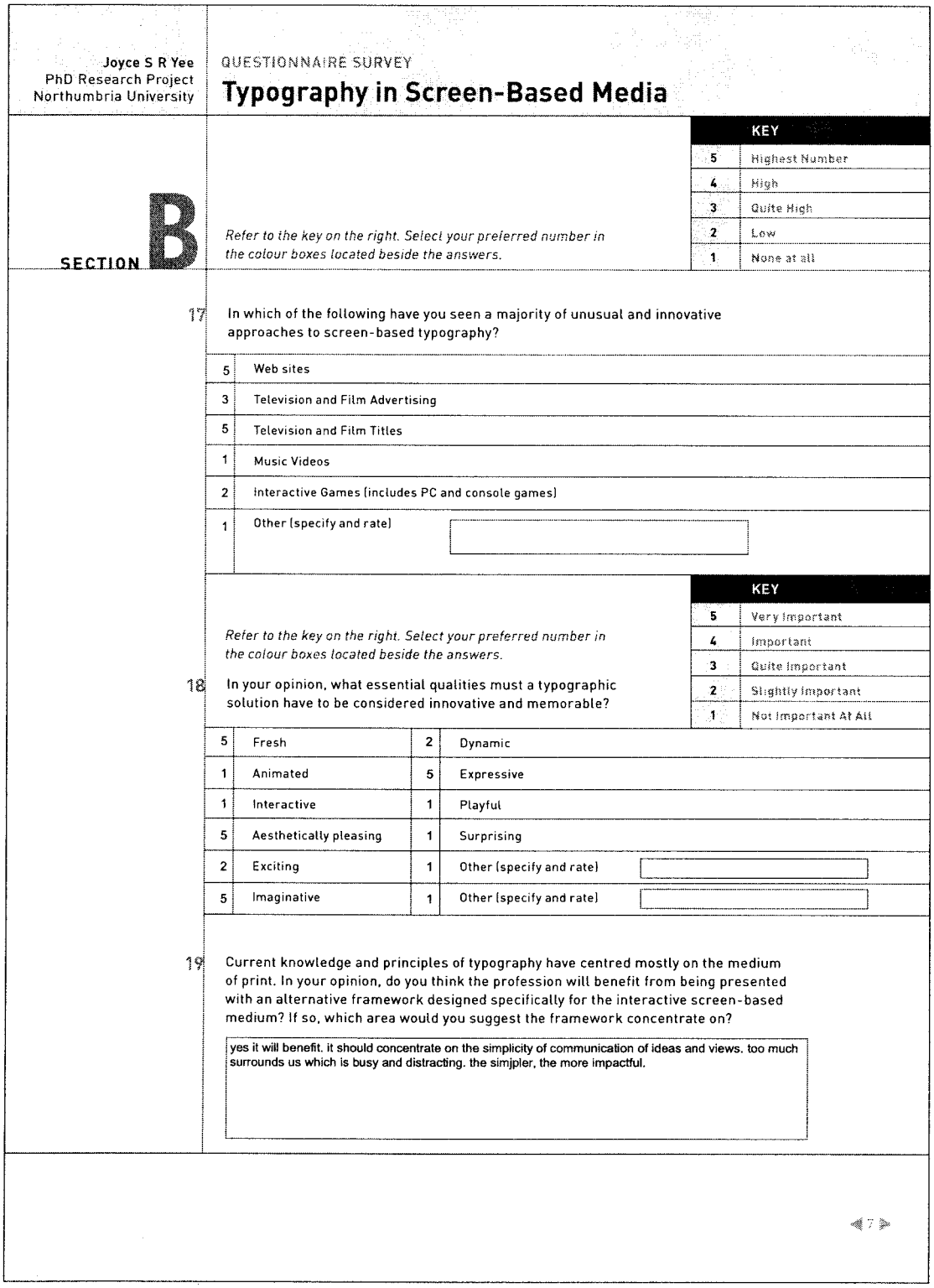
KEY	
5	Very Influential
4	Influential
3	Quite Influential
2	Slightly Influential
1	Not Influential At All

16 In turn, how much influence have the effects of screen-based typography had on the current development of print-based typography?

3	A decreased level of textual fixity
5	An increased convergence of the visual (graphics, video and animation) with the textual elements of the content
5	The emergence of type as the new visual and expressive element
5	A decreased level of authority in text
2	A decreased level of design control over the visual display of type to the end-user
1	Other (specify and rate)

Figure 4.6 Sample Questionnaire 1: Page 4

4.3 Respondent Sample 1



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QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION **B**

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Highest Number
4	High
3	Quite High
2	Low
1	None at all

17 In which of the following have you seen a majority of unusual and innovative approaches to screen-based typography?

5	Web sites
3	Television and Film Advertising
5	Television and Film Titles
1	Music Videos
2	Interactive Games (includes PC and console games)
1	Other (specify and rate)

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

18 In your opinion, what essential qualities must a typographic solution have to be considered innovative and memorable?

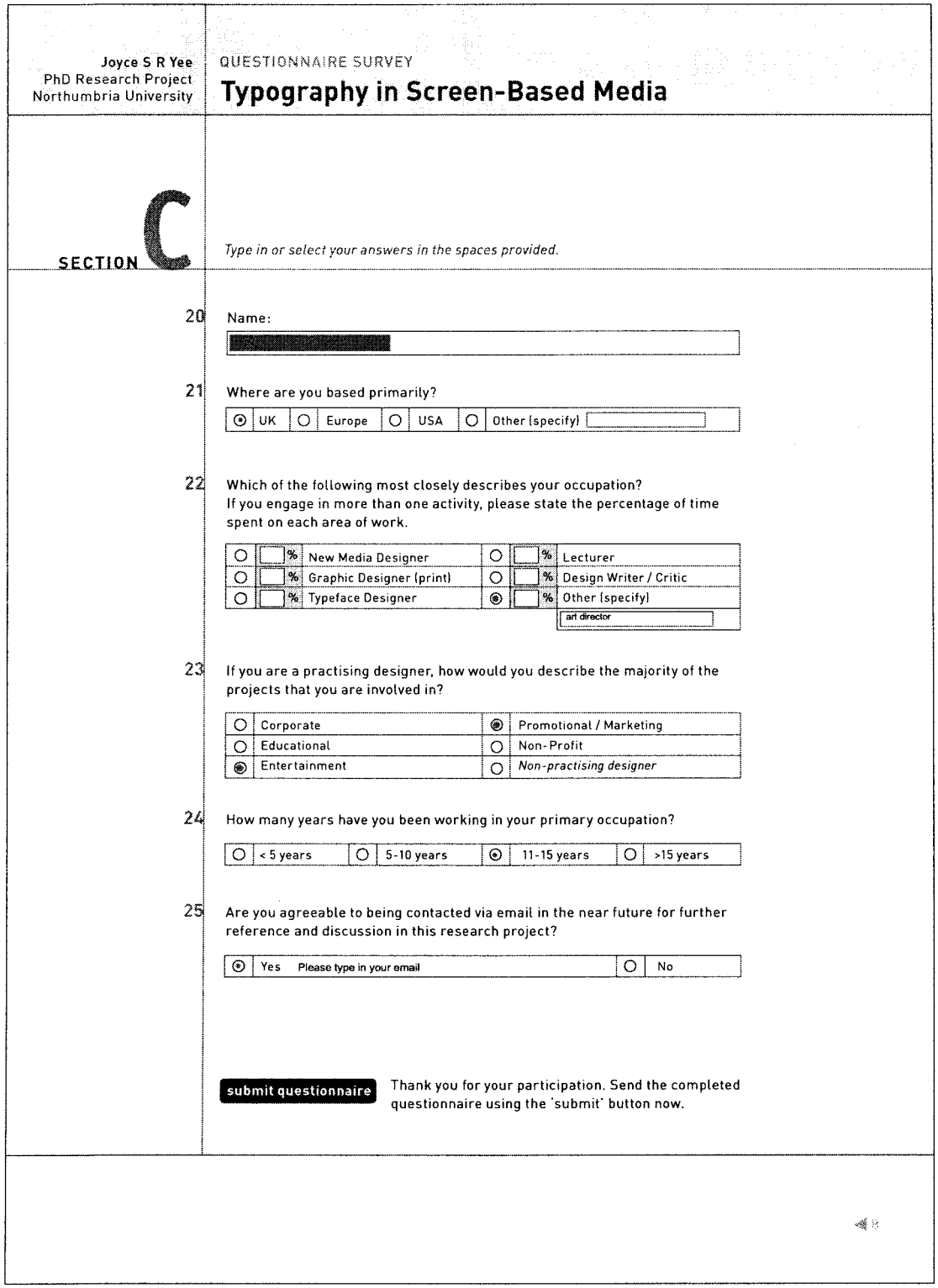
5	Fresh	2	Dynamic
1	Animated	5	Expressive
1	Interactive	1	Playful
5	Aesthetically pleasing	1	Surprising
2	Exciting	1	Other (specify and rate)
5	Imaginative	1	Other (specify and rate)

19 Current knowledge and principles of typography have centred mostly on the medium of print. In your opinion, do you think the profession will benefit from being presented with an alternative framework designed specifically for the interactive screen-based medium? If so, which area would you suggest the framework concentrate on?

yes it will benefit. it should concentrate on the simplicity of communication of ideas and views. too much surrounds us which is busy and distracting. the simjpler, the more impactful.

Figure 4.7 Sample Questionnaire 1: Page 5

4.3 Respondent Sample 1



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QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION C

Type in or select your answers in the spaces provided.

20 Name:

21 Where are you based primarily?

(•) UK ( ) Europe ( ) USA ( ) Other (specify)

22 Which of the following most closely describes your occupation?
If you engage in more than one activity, please state the percentage of time spent on each area of work.

( )	%	New Media Designer	( )	%	Lecturer
( )	%	Graphic Designer (print)	( )	%	Design Writer / Critic
( )	%	Typeface Designer	(•)	%	Other (specify)
					art director

23 If you are a practising designer, how would you describe the majority of the projects that you are involved in?

( )	Corporate	(•)	Promotional / Marketing
( )	Educational	( )	Non-Profit
(•)	Entertainment	( )	*Non-practising designer*

24 How many years have you been working in your primary occupation?

( ) < 5 years ( ) 5-10 years (•) 11-15 years ( ) >15 years

25 Are you agreeable to being contacted via email in the near future for further reference and discussion in this research project?

(•) Yes Please type in your email ( ) No

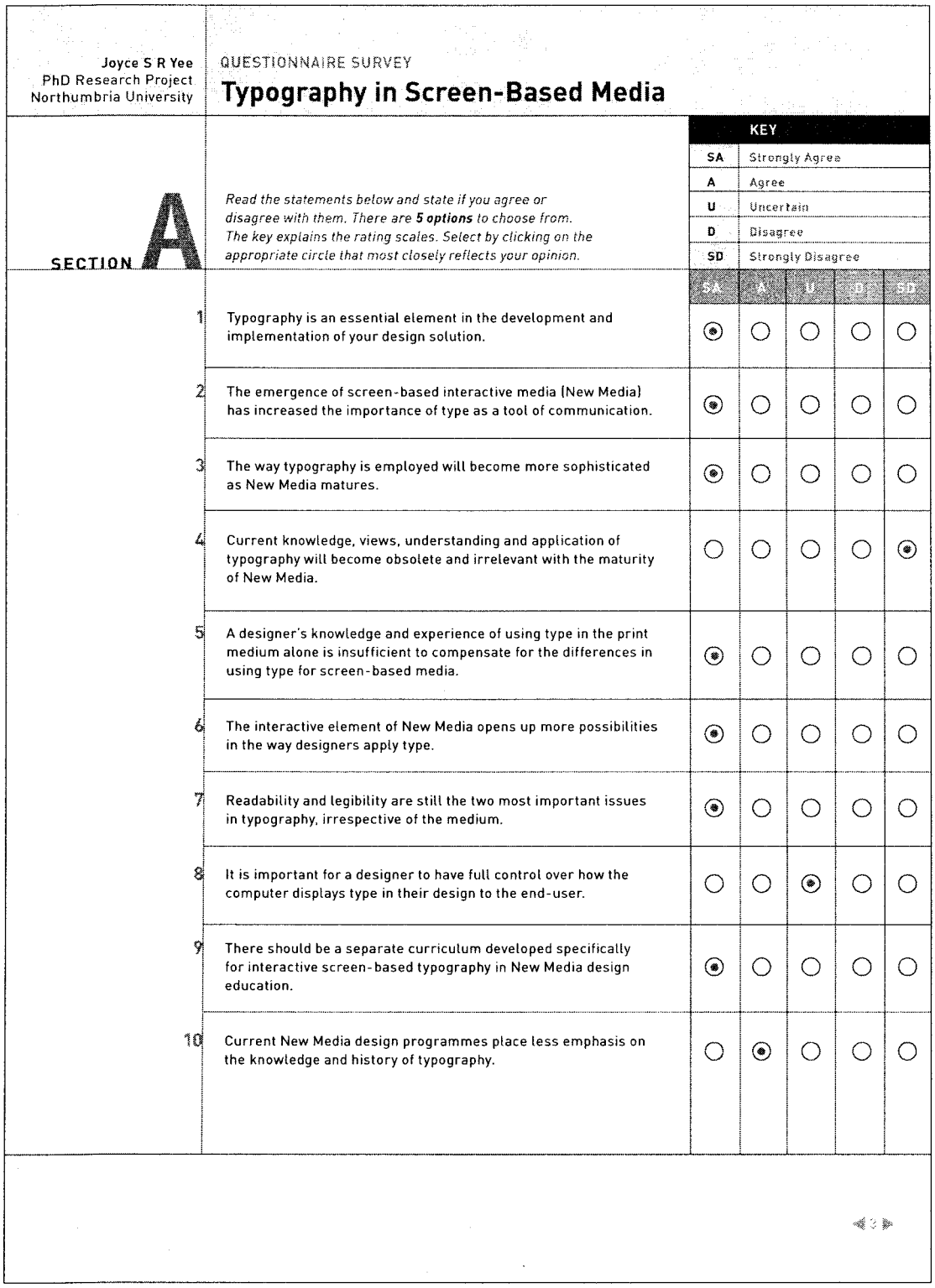
submit questionnaire

Thank you for your participation. Send the completed questionnaire using the 'submit' button now.

Figure 4.8 Sample Questionnaire 1: Page 6

4.4 Respondent Sample 2

Answers from respondent sample 2.



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION A

*Read the statements below and state if you agree or disagree with them. There are **5 options** to choose from. The key explains the rating scales. Select by clicking on the appropriate circle that most closely reflects your opinion.*

KEY	
SA	Strongly Agree
A	Agree
U	Uncertain
D	Disagree
SD	Strongly Disagree

		SA	A	U	D	SD
1	Typography is an essential element in the development and implementation of your design solution.	◉	○	○	○	○
2	The emergence of screen-based interactive media (New Media) has increased the importance of type as a tool of communication.	◉	○	○	○	○
3	The way typography is employed will become more sophisticated as New Media matures.	◉	○	○	○	○
4	Current knowledge, views, understanding and application of typography will become obsolete and irrelevant with the maturity of New Media.	○	○	○	○	◉
5	A designer's knowledge and experience of using type in the print medium alone is insufficient to compensate for the differences in using type for screen-based media.	◉	○	○	○	○
6	The interactive element of New Media opens up more possibilities in the way designers apply type.	◉	○	○	○	○
7	Readability and legibility are still the two most important issues in typography, irrespective of the medium.	◉	○	○	○	○
8	It is important for a designer to have full control over how the computer displays type in their design to the end-user.	○	○	◉	○	○
9	There should be a separate curriculum developed specifically for interactive screen-based typography in New Media design education.	◉	○	○	○	○
10	Current New Media design programmes place less emphasis on the knowledge and history of typography.	○	◉	○	○	○

Figure 4.9 Sample Questionnaire 2: Page 1

4.4 Respondent Sample 2

Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION B

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

11 Below is a list of elements used in screen-based interactive media. Rate each of them based on the value they bring to the experience of interactive content.

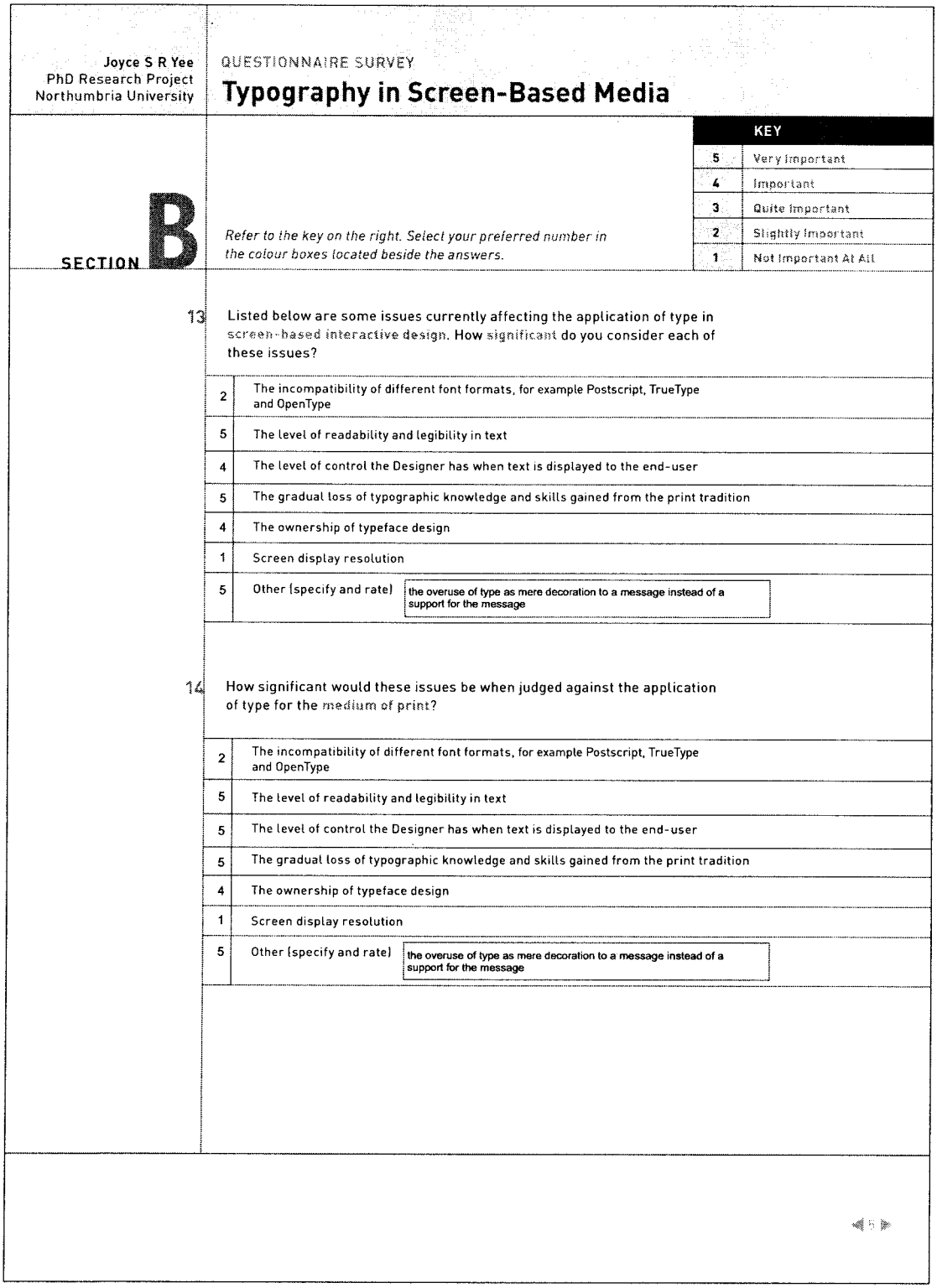
5	Sound
2	Graphic (includes photographs, diagrams and maps)
3	Hypertext
2	Digital Video (movies)
3	Animation

12 Below are statements about various properties of type in New Media. Rate each of them based on their importance.

3	Type is Hypertext
4	Type is Reading
5	Type is Visual
3	Type is Image
3	Type is Interactive
1	Type is Computer Data
5	Type is Expressive
5	Type is Communication
1	Type is Customisable
4	Type is emotional *(fill in your own version)*

Figure 4.10 Sample Questionnaire 2: Page 2

4.4 Respondent Sample 2



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION **B**

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

13 Listed below are some issues currently affecting the application of type in screen-based interactive design. How significant do you consider each of these issues?

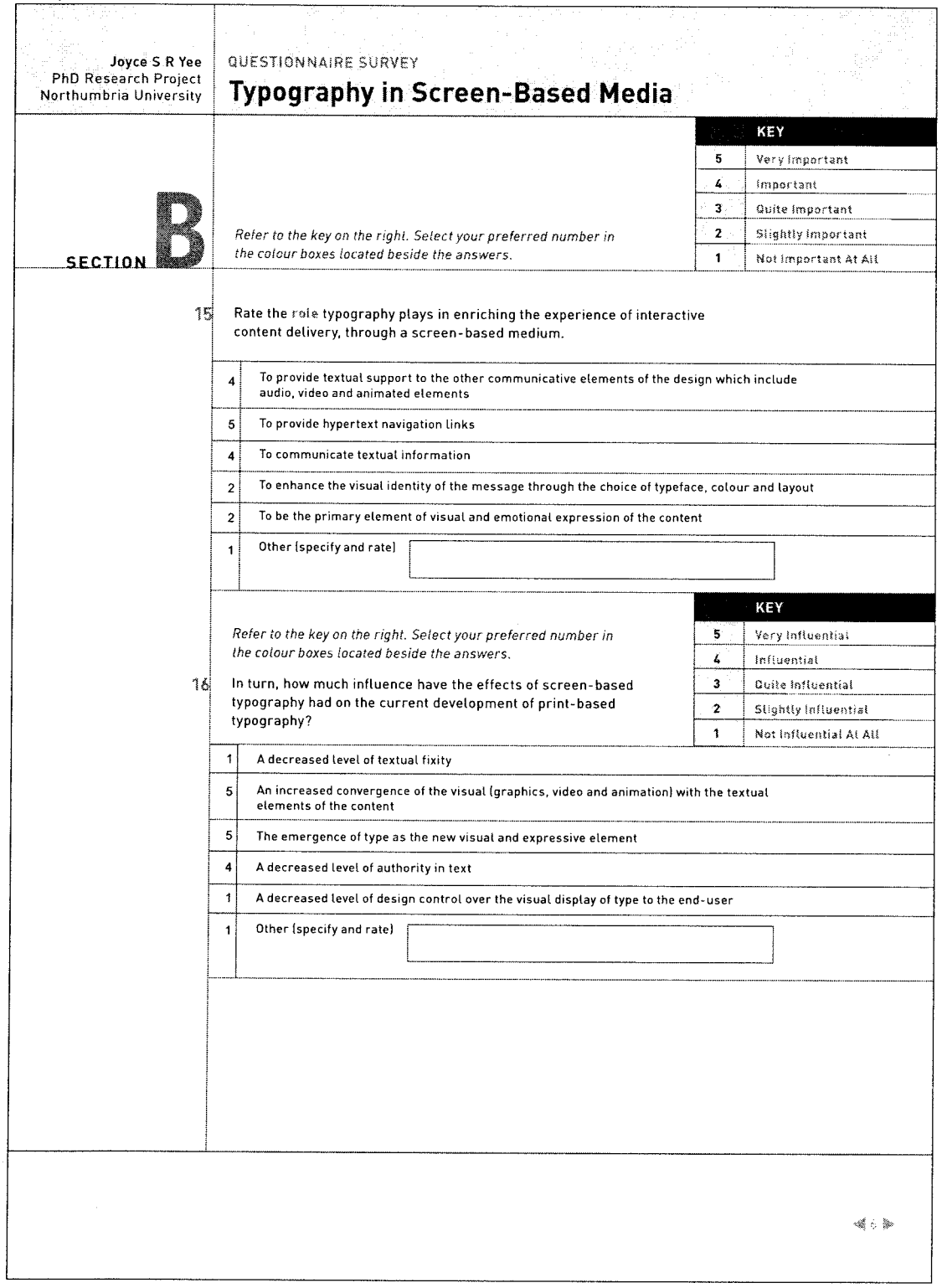
2	The incompatibility of different font formats, for example Postscript, TrueType and OpenType
5	The level of readability and legibility in text
4	The level of control the Designer has when text is displayed to the end-user
5	The gradual loss of typographic knowledge and skills gained from the print tradition
4	The ownership of typeface design
1	Screen display resolution
5	Other (specify and rate) the overuse of type as mere decoration to a message instead of a support for the message

14 How significant would these issues be when judged against the application of type for the medium of print?

2	The incompatibility of different font formats, for example Postscript, TrueType and OpenType
5	The level of readability and legibility in text
5	The level of control the Designer has when text is displayed to the end-user
5	The gradual loss of typographic knowledge and skills gained from the print tradition
4	The ownership of typeface design
1	Screen display resolution
5	Other (specify and rate) the overuse of type as mere decoration to a message instead of a support for the message

Figure 4.11 Sample Questionnaire 2: Page 3

4.4 Respondent Sample 2



Joyce S R Yee
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Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION **B**

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

15 Rate the role typography plays in enriching the experience of interactive content delivery, through a screen-based medium.

4	To provide textual support to the other communicative elements of the design which include audio, video and animated elements
5	To provide hypertext navigation links
4	To communicate textual information
2	To enhance the visual identity of the message through the choice of typeface, colour and layout
2	To be the primary element of visual and emotional expression of the content
1	Other (specify and rate)

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

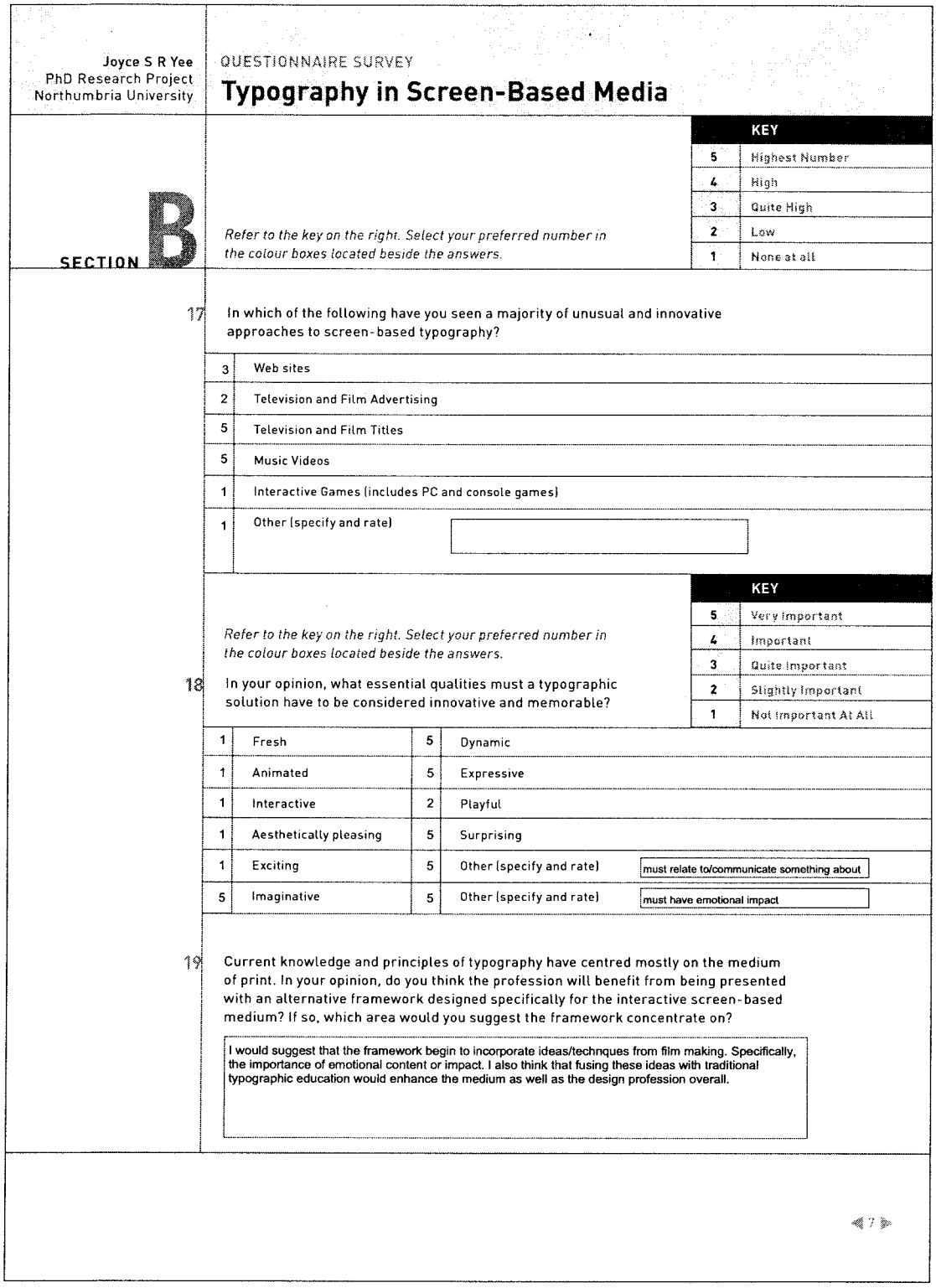
KEY	
5	Very Influential
4	Influential
3	Quite Influential
2	Slightly Influential
1	Not Influential At All

16 In turn, how much influence have the effects of screen-based typography had on the current development of print-based typography?

1	A decreased level of textual fixity
5	An increased convergence of the visual (graphics, video and animation) with the textual elements of the content
5	The emergence of type as the new visual and expressive element
4	A decreased level of authority in text
1	A decreased level of design control over the visual display of type to the end-user
1	Other (specify and rate)

Figure 4.12 Sample Questionnaire 2: Page 4

4.4 Respondent Sample 2



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION **B**

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Highest Number
4	High
3	Quite High
2	Low
1	None at all

17 In which of the following have you seen a majority of unusual and innovative approaches to screen-based typography?

3	Web sites
2	Television and Film Advertising
5	Television and Film Titles
5	Music Videos
1	Interactive Games (includes PC and console games)
1	Other (specify and rate)

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

18 In your opinion, what essential qualities must a typographic solution have to be considered innovative and memorable?

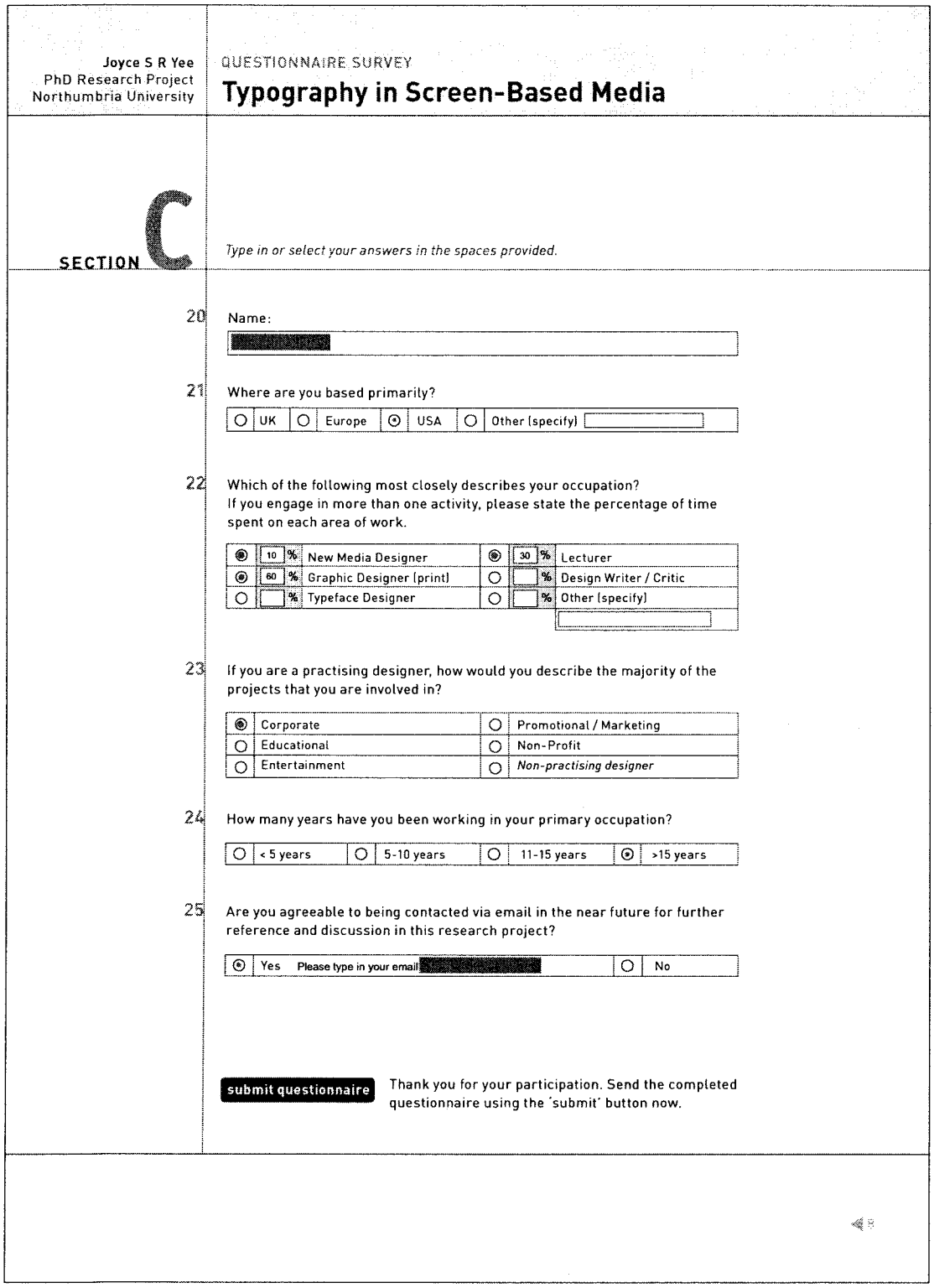
1	Fresh	5	Dynamic
1	Animated	5	Expressive
1	Interactive	2	Playful
1	Aesthetically pleasing	5	Surprising
1	Exciting	5	Other (specify and rate) must relate to/communicate something about
5	Imaginative	5	Other (specify and rate) must have emotional impact

19 Current knowledge and principles of typography have centred mostly on the medium of print. In your opinion, do you think the profession will benefit from being presented with an alternative framework designed specifically for the interactive screen-based medium? If so, which area would you suggest the framework concentrate on?

I would suggest that the framework begin to incorporate ideas/technques from film making. Specifically, the importance of emotional content or impact. I also think that fusing these ideas with traditional typographic education would enhance the medium as well as the design profession overall.

Figure 4.13 Sample Questionnaire 2: Page 5

4.4 Respondent Sample 2



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION C

Type in or select your answers in the spaces provided.

20 Name:

21 Where are you based primarily?

○ UK ○ Europe ◉ USA ○ Other (specify)

22 Which of the following most closely describes your occupation?
If you engage in more than one activity, please state the percentage of time spent on each area of work.

◉	10 %	New Media Designer	◉	30 %	Lecturer
◉	60 %	Graphic Designer (print)	○	%	Design Writer / Critic
○	%	Typeface Designer	○	%	Other (specify)

23 If you are a practising designer, how would you describe the majority of the projects that you are involved in?

◉	Corporate	○	Promotional / Marketing
○	Educational	○	Non-Profit
○	Entertainment	○	*Non-practising designer*

24 How many years have you been working in your primary occupation?

○	< 5 years	○	5-10 years	○	11-15 years	◉	>15 years

25 Are you agreeable to being contacted via email in the near future for further reference and discussion in this research project?

◉	Yes Please type in your email	○	No

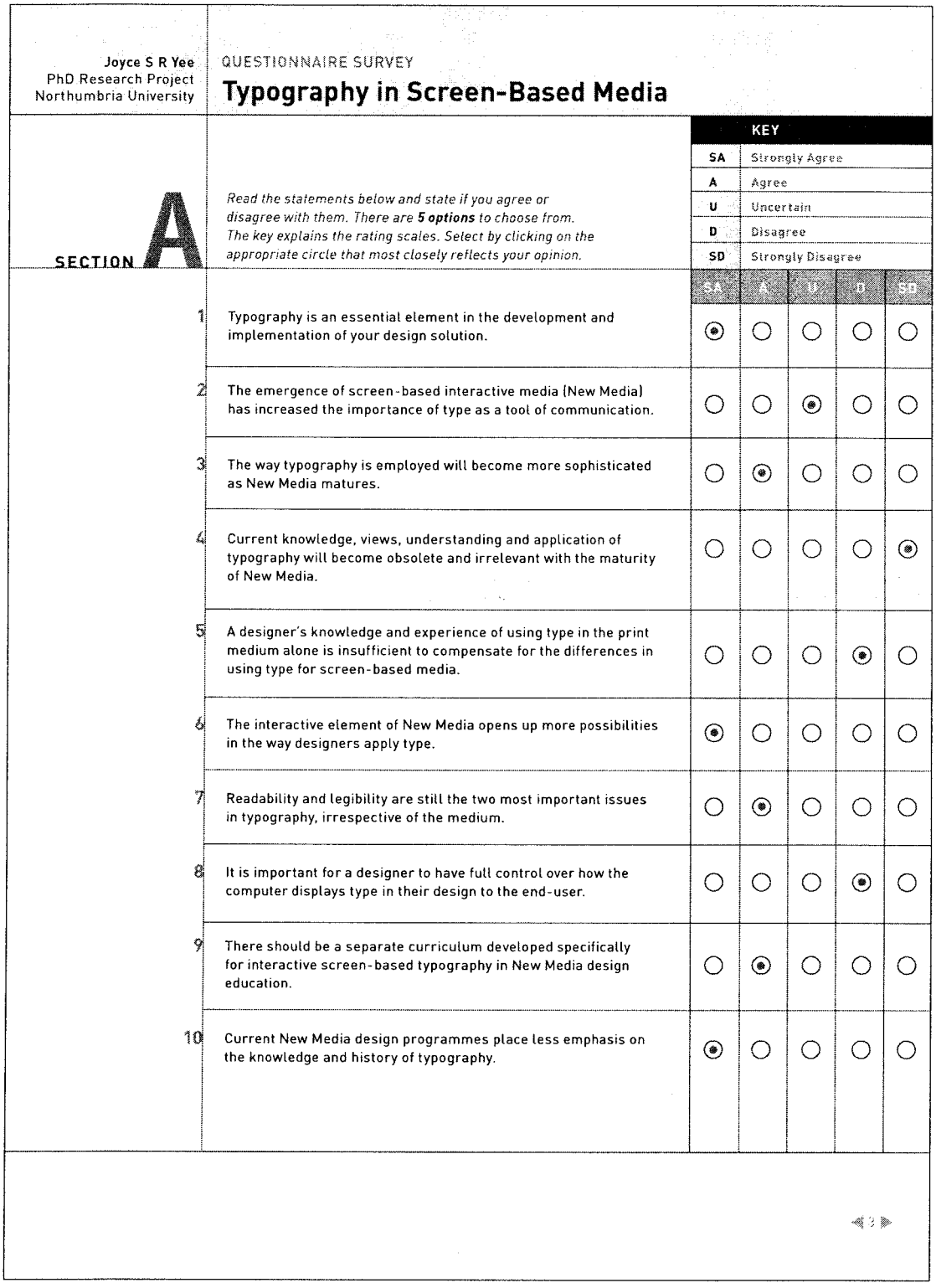
submit questionnaire

Thank you for your participation. Send the completed questionnaire using the 'submit' button now.

Figure 4.14 Sample Questionnaire 2: Page 6

4.5 Respondent Sample 3

Answers from respondent sample 3.



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION A

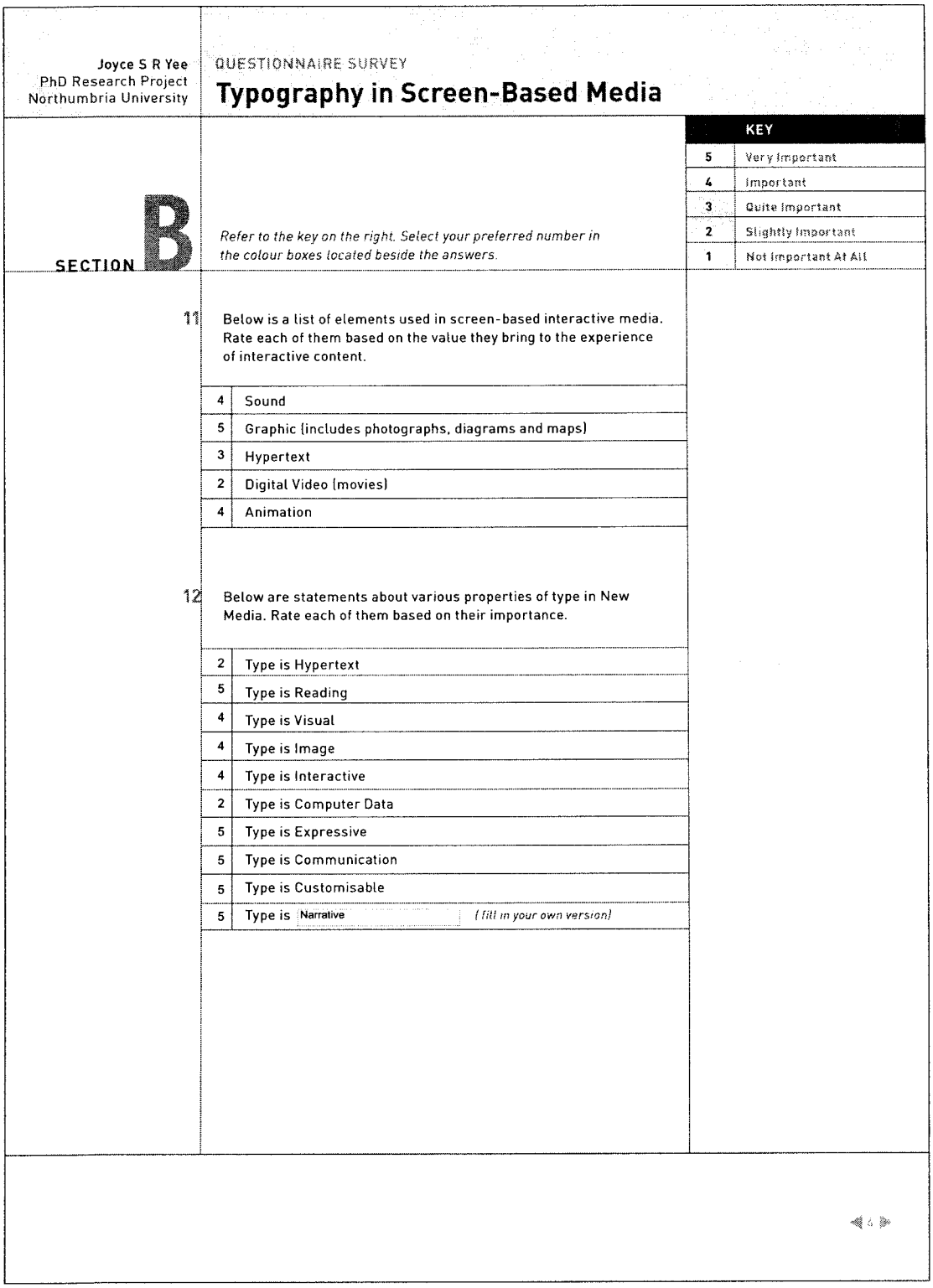
*Read the statements below and state if you agree or disagree with them. There are **5 options** to choose from. The key explains the rating scales. Select by clicking on the appropriate circle that most closely reflects your opinion.*

KEY	
SA	Strongly Agree
A	Agree
U	Uncertain
D	Disagree
SD	Strongly Disagree

		SA	A	U	D	SD
1	Typography is an essential element in the development and implementation of your design solution.	◉	○	○	○	○
2	The emergence of screen-based interactive media (New Media) has increased the importance of type as a tool of communication.	○	○	◉	○	○
3	The way typography is employed will become more sophisticated as New Media matures.	○	◉	○	○	○
4	Current knowledge, views, understanding and application of typography will become obsolete and irrelevant with the maturity of New Media.	○	○	○	○	◉
5	A designer's knowledge and experience of using type in the print medium alone is insufficient to compensate for the differences in using type for screen-based media.	○	○	○	◉	○
6	The interactive element of New Media opens up more possibilities in the way designers apply type.	◉	○	○	○	○
7	Readability and legibility are still the two most important issues in typography, irrespective of the medium.	○	◉	○	○	○
8	It is important for a designer to have full control over how the computer displays type in their design to the end-user.	○	○	○	◉	○
9	There should be a separate curriculum developed specifically for interactive screen-based typography in New Media design education.	○	◉	○	○	○
10	Current New Media design programmes place less emphasis on the knowledge and history of typography.	◉	○	○	○	○

Figure 4.15 Sample Questionnaire 3: Page 1

4.5 Respondent Sample 3



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

SECTION B

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

11 Below is a list of elements used in screen-based interactive media. Rate each of them based on the value they bring to the experience of interactive content.

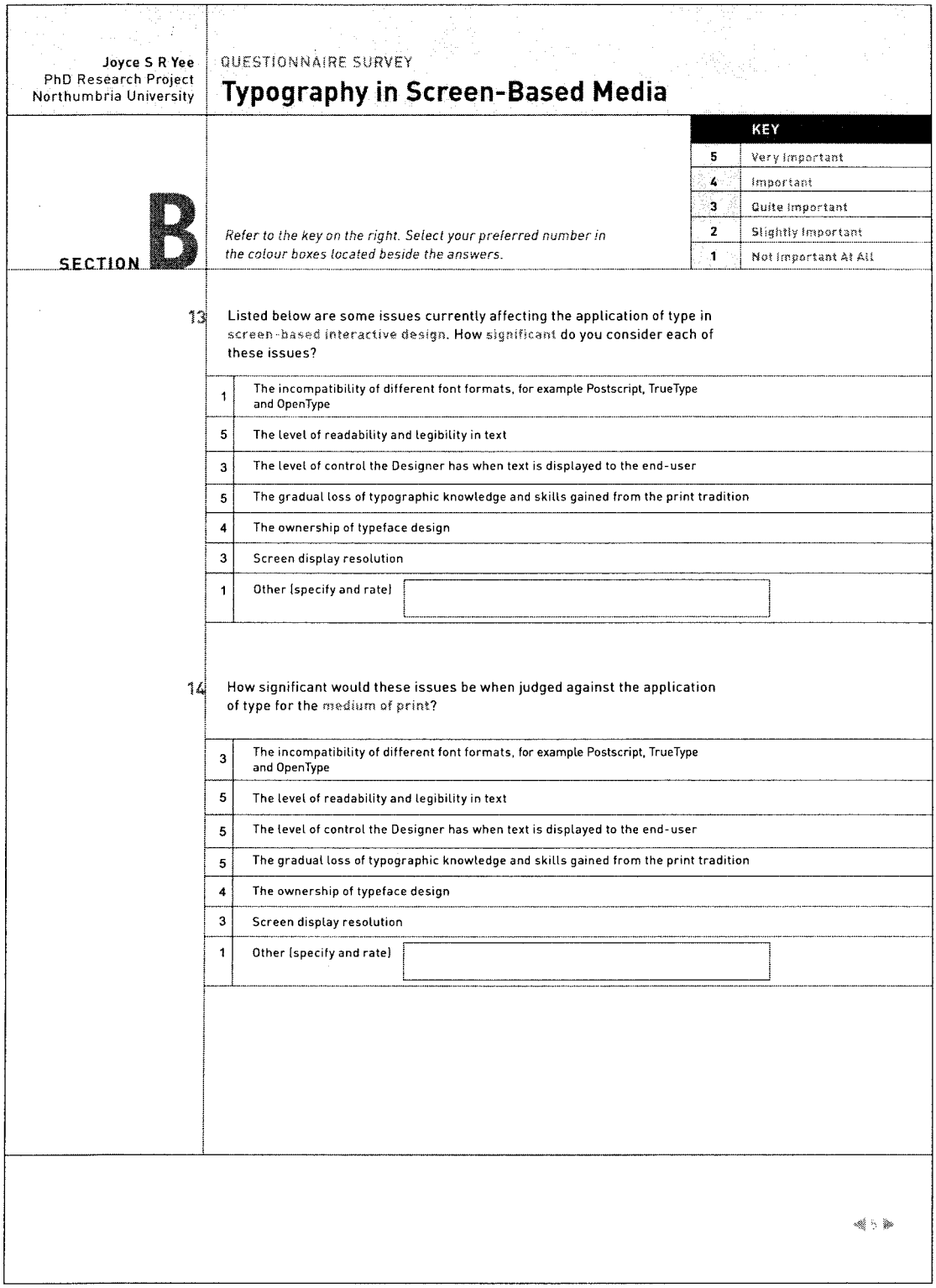
4	Sound
5	Graphic (includes photographs, diagrams and maps)
3	Hypertext
2	Digital Video (movies)
4	Animation

12 Below are statements about various properties of type in New Media. Rate each of them based on their importance.

2	Type is Hypertext
5	Type is Reading
4	Type is Visual
4	Type is Image
4	Type is Interactive
2	Type is Computer Data
5	Type is Expressive
5	Type is Communication
5	Type is Customisable
5	Type is Narrative *(fill in your own version)*

Figure 4.16 Sample Questionnaire 3: Page 2

4.5 Respondent Sample 3



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION B

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

13 Listed below are some issues currently affecting the application of type in screen-based interactive design. How significant do you consider each of these issues?

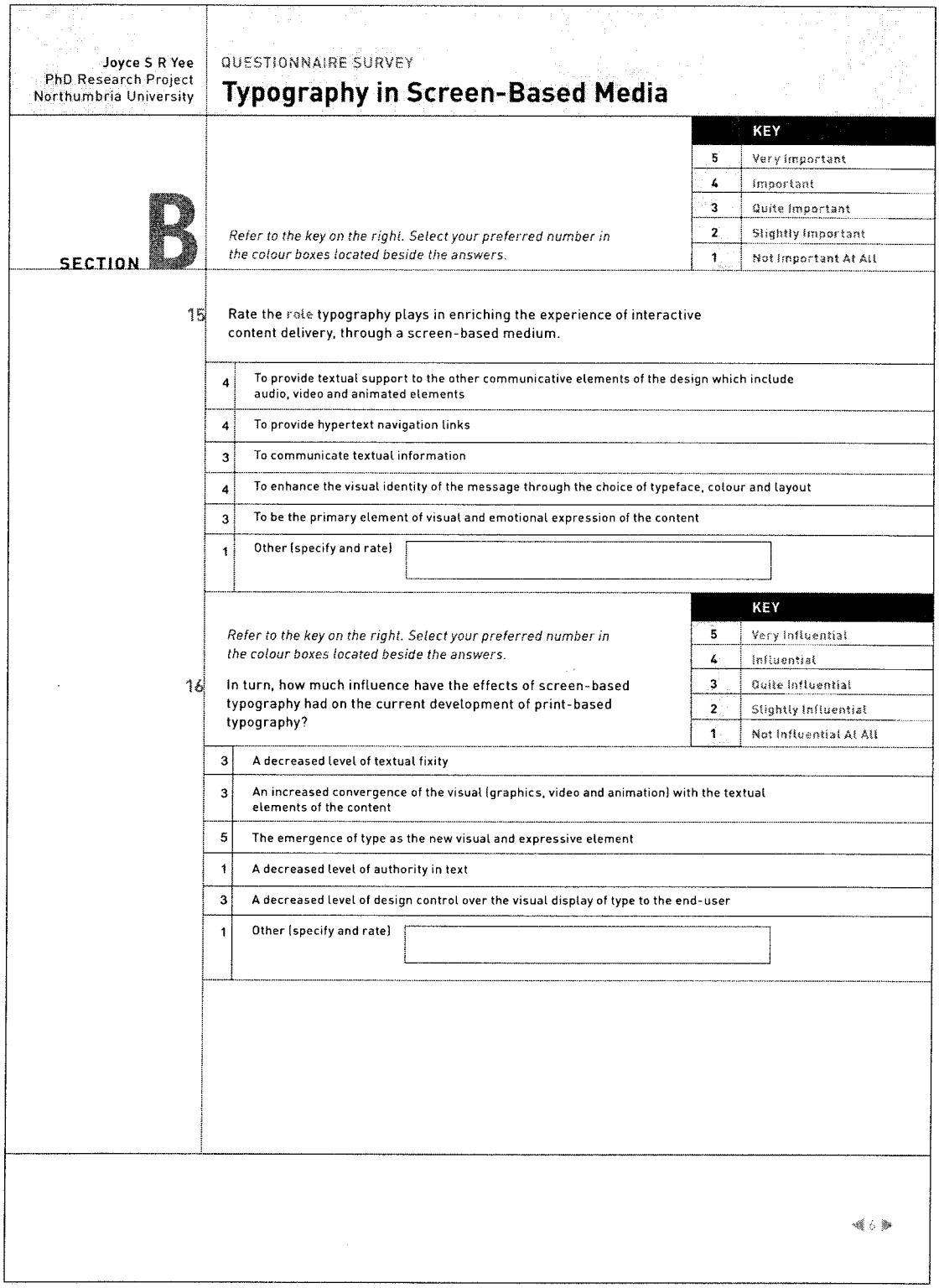
1	The incompatibility of different font formats, for example Postscript, TrueType and OpenType
5	The level of readability and legibility in text
3	The level of control the Designer has when text is displayed to the end-user
5	The gradual loss of typographic knowledge and skills gained from the print tradition
4	The ownership of typeface design
3	Screen display resolution
1	Other (specify and rate)

14 How significant would these issues be when judged against the application of type for the medium of print?

3	The incompatibility of different font formats, for example Postscript, TrueType and OpenType
5	The level of readability and legibility in text
5	The level of control the Designer has when text is displayed to the end-user
5	The gradual loss of typographic knowledge and skills gained from the print tradition
4	The ownership of typeface design
3	Screen display resolution
1	Other (specify and rate)

Figure 4.17 Sample Questionnaire 3: Page 3

4.5 Respondent Sample 3



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION B

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Very important
4	Important
3	Quite important
2	Slightly important
1	Not important At All

15 Rate the role typography plays in enriching the experience of interactive content delivery, through a screen-based medium.

4	To provide textual support to the other communicative elements of the design which include audio, video and animated elements
4	To provide hypertext navigation links
3	To communicate textual information
4	To enhance the visual identity of the message through the choice of typeface, colour and layout
3	To be the primary element of visual and emotional expression of the content
1	Other (specify and rate)

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

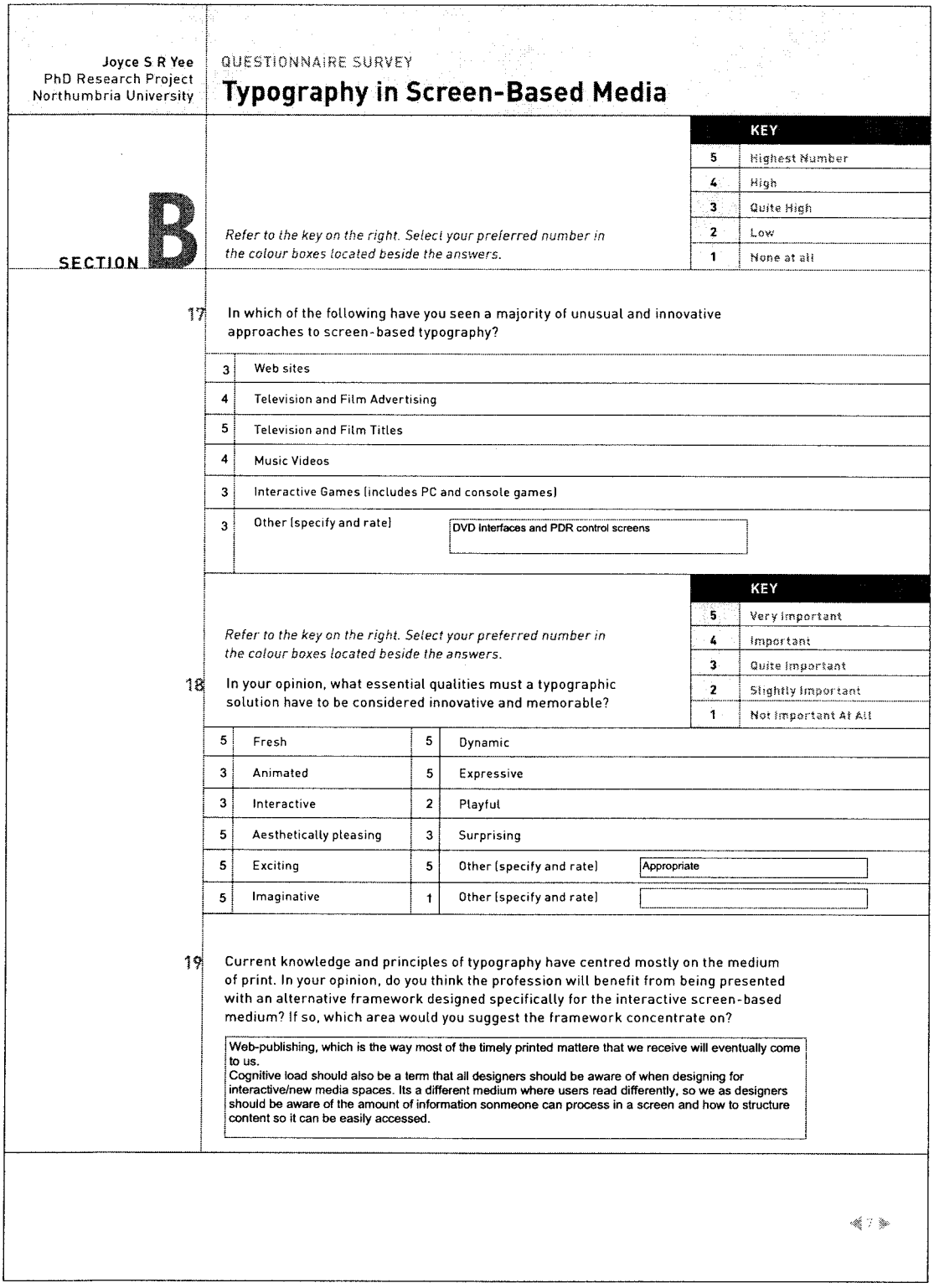
KEY	
5	Very Influential
4	Influential
3	Quite Influential
2	Slightly Influential
1	Not Influential At All

16 In turn, how much influence have the effects of screen-based typography had on the current development of print-based typography?

3	A decreased level of textual fixity
3	An increased convergence of the visual (graphics, video and animation) with the textual elements of the content
5	The emergence of type as the new visual and expressive element
1	A decreased level of authority in text
3	A decreased level of design control over the visual display of type to the end-user
1	Other (specify and rate)

Figure 4.18 Sample Questionnaire 3: Page 4

4.5 Respondent Sample 3



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION **B**

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Highest Number
4	High
3	Quite High
2	Low
1	None at all

17 In which of the following have you seen a majority of unusual and innovative approaches to screen-based typography?

3	Web sites
4	Television and Film Advertising
5	Television and Film Titles
4	Music Videos
3	Interactive Games (includes PC and console games)
3	Other (specify and rate) DVD interfaces and PDR control screens

Refer to the key on the right. Select your preferred number in the colour boxes located beside the answers.

KEY	
5	Very Important
4	Important
3	Quite Important
2	Slightly Important
1	Not Important At All

18 In your opinion, what essential qualities must a typographic solution have to be considered innovative and memorable?

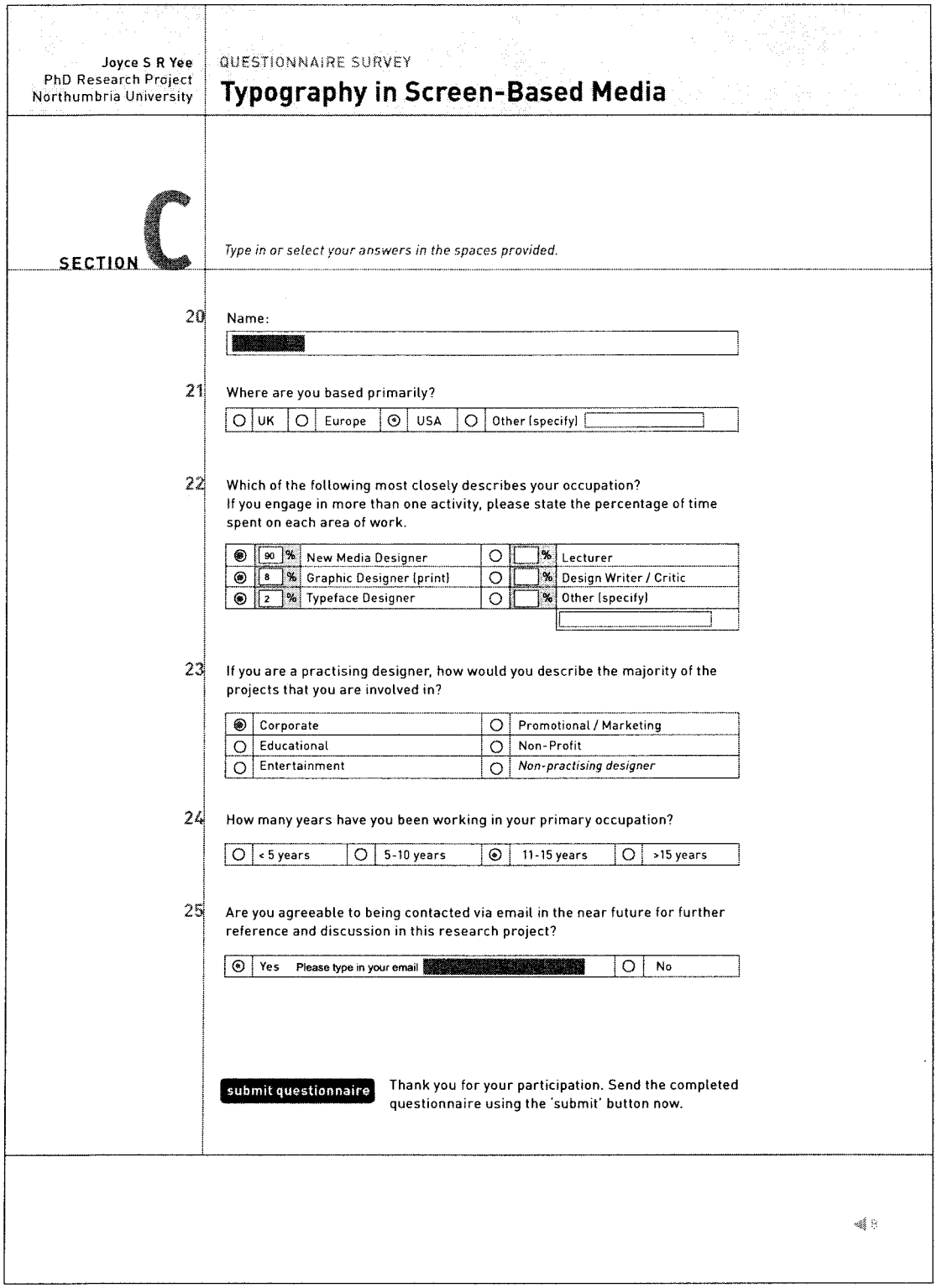
5	Fresh	5	Dynamic
3	Animated	5	Expressive
3	Interactive	2	Playful
5	Aesthetically pleasing	3	Surprising
5	Exciting	5	Other (specify and rate) Appropriate
5	Imaginative	1	Other (specify and rate)

19 Current knowledge and principles of typography have centred mostly on the medium of print. In your opinion, do you think the profession will benefit from being presented with an alternative framework designed specifically for the interactive screen-based medium? If so, which area would you suggest the framework concentrate on?

Web-publishing, which is the way most of the timely printed mattere that we receive will eventually come to us.
Cognitive load should also be a term that all designers should be aware of when designing for interactive/new media spaces. Its a different medium where users read differently, so we as designers should be aware of the amount of information sonmeone can process in a screen and how to structure content so it can be easily accessed.

Figure 4.19 Sample Questionnaire 3: Page 5

4.5 Respondent Sample 3



Joyce S R Yee
PhD Research Project
Northumbria University

QUESTIONNAIRE SURVEY

Typography in Screen-Based Media

SECTION C

Type in or select your answers in the spaces provided.

20 Name:

[redacted]

21 Where are you based primarily?

○ UK ○ Europe ◉ USA ○ Other (specify)

22 Which of the following most closely describes your occupation?
If you engage in more than one activity, please state the percentage of time spent on each area of work.

◉	90 %	New Media Designer	○	%	Lecturer
◉	8 %	Graphic Designer (print)	○	%	Design Writer / Critic
◉	2 %	Typeface Designer	○	%	Other (specify)

23 If you are a practising designer, how would you describe the majority of the projects that you are involved in?

◉	Corporate	○	Promotional / Marketing
○	Educational	○	Non-Profit
○	Entertainment	○	*Non-practising designer*

24 How many years have you been working in your primary occupation?

○	< 5 years	○	5-10 years	◉	11-15 years	○	>15 years

25 Are you agreeable to being contacted via email in the near future for further reference and discussion in this research project?

◉ Yes Please type in your email [redacted] ○ No

submit questionnaire Thank you for your participation. Send the completed questionnaire using the 'submit' button now.

Figure 4.20 Sample Questionnaire 3: Page 6

APPENDIX 5

5.1 Interview Guide Script

Below is the script guide for the online interviews conducted with subject experts. The italisize words are explanatory notes and reminders to the researcher during the interview.

A. Introduction

Hello. Thank you once again for agreeing to take part in this interview. Your participation is extremely important and your comments will contribute significantly to the outcome of this research.

Before we begin, I think it's best to spend the first few minutes to give you an idea the range of topics I hope to cover. There are 5 parts to this interview. They are:

A. Introduction and Background – An introduction to the PhD research and restating the aim of the interviews.
B. Typographic understanding and knowledge (print and screen)
C. Role of screen-based typography
D. Typographic framework development
E. Framework Building Blocks

I shall be saving the text of our conversation for analysis. Is this agreeable to you? I would also like to reiterate again that the information collected would only be used for this PhD research project. The responses to the interviews will be made anonymous, but that the disciplines of the respondents will be recorded to help in the analysis process.

Feel free to ask questions yourself and to raise any topics that you think are relevant during the interview. Before we begin, would you like me to refresh your memory on the purpose of this study? (As was mentioned in my first contact email to you) *If yes, the next section is included in the conversation.*

Purpose of the survey:

This interview is part of my PhD research project at the Centre for Design Research, Northumbria University. The PhD research investigates the relevance of typography in the face of technological and social changes brought on by the digital revolution. Its primary aim is to develop a practice-led framework for the application of typography in screen-based interactive media.

The purpose of this survey is to enquire about your attitude towards the relevance of print-derived typographic knowledge and skills for the application of screen-based typography. The structure of the interview is based on key findings of a questionnaire survey sent out to Graphic/New Media Designers and Educators.

Icebreaker

1. Right, now that we got that out of the way, can you tell me a little bit about the work that you are involved in at the moment?

2. How long have you been working on this?

B. Level of typographic understanding and knowledge

Finding out the level of knowledge the interviewee has on the subject of typography (this part will change slightly to cater to the different participants' backgrounds.

1. What does the term 'typography' mean to you? (How would you define typography?)
   Probe answer for examples, elaboration etc.

2. What are your views on interactive screen-based media?

3. What are your observations about current typography found on the web? Do you see any difference in the way typography is used for print as opposed to for the web? (the most prevalent and familiar screen-based interactive medium)

C. Role of future screen-based typography

Type remains the main tool of communication

1. Findings from my recent questionnaire survey indicated that the graphic and new media designers predominantly consider type as their main tool of communication in screen-based media. In particular, the issue of readability and legibility are the main concern of designers when using type.

2. Does this correspond to your own observation?
   If not probe why? If yes, do they think it will change in the future?

3. While the technology used to create typography offers fewer restrictions to the creation of typographic forms, our expectation of typography (from a designer's and a

user's point of view) has not changed significantly from a print society. Generally, designers still view and judge typography in the context of print-derived rules.

Do you agree with this statement? If so, is this mindset still appropriate for the digital medium? *(Question only relevant to design related experts)*

4. If not, how do you propose designers overcome this?

5. In your opinion, will it be designers or users that will be the primary driving force of future screen-based typography? *(Question only relevant to design related experts) Prompt - (If neither of these 2 groups, who then? Programmers? Writers? Microsoft?)*

D. Framework Development and Approach

Reappropriation of existing typographic knowledge

In Lev Manovich's book The Language of New Media, he stresses the connections and continuities of old into new media. Specifically, he has used the art of the cinema to highlight this point. While Jay David Bolter and Richard Gruisin's book; Remediation, argue that visual media achieve their cultural significance precisely by paying homage to, rivaling, and refashioning (remediating) such earlier media as perspective painting, photography, film and television.

Typography for screen is essentially going through the same process of appropriating the print-derived knowledge into a usable format for screen.

1. Do you agree with this observation?

2. Is this appropriation benefiting or hindering the development of screen-based typography?

3. What is typography's role in light of the changes brought on by the digital technology? (What is typography's future role?)

A typographic framework independent of medium

One of the main enquiries of the questionnaire was to investigate if the new typographic framework should be medium dependent or not. While there is general consensus that print and screen-based media are different, the designers' approach to typography should not be any different because type is used to communicate a textual message. However, there is an opposing

view, which believes that the need to understand and cater for the characteristics of screen-based media should be foremost in the consideration of the framework.

4. I know these 2 views are not mutually exclusive but what are your views on this issue?

A multi-disciplinary influence in the typographic framework

Some characteristics of new media have been in existence in established disciplines such as the fine arts, filmmaking and literature.

5. Do you think that these kinds of influences are beneficial to the development of new media content?

6. Is it beneficial to incorporate the ideas and techniques of other related disciplines into the new typographic framework?
   (If so, which discipline has had the most influence on the design of new media content? Can you suggest an example? How can we encourage more thinking and approaches like these?)

E. Framework Ingredients

Non-Linear Narrative using Hypertext Fiction as a Model

Going back to the development of the framework, I have suggested that we look at the non-linear narrative characteristic of hypertext as a model. (Hypertext in this context refers to screen text (or images) linked electronically by multiple paths, chains or trails, which offer the reader different pathways.) Hypertext fiction is a good example of a highly interactive form of electronic text.

1. As print typography is closely linked and even taken to be text, do you see the same kind of relationship between screen type with Hypertext?

2. You mentioned that you do not see a distinction between Cybertext and Hypertext. Is Cybertext, screen type? *(Used only for the Hypertext expert)*

3. If so, what is typography's purpose in the context of Hypertext usage? Does it influence the development of Hypertext? In turn, do you think the fundamental idea of Hypertext as interlinking screen text will influence the way designers design for screen? Wait for answer, the probe, why? *(Used only for the Hypertext expert)*

4. There are concerns that the role of the designer and writer is 'seriously compromised' when the means to control the outcome of a Hypertext object or writing is lost. Is this a positive or negative aspect? *(Used only for the Hypertext expert)*

5. The context in which Hypertext is taken is based primarily on the www model. However, I am aware that there are a number of successful Hypertext systems such as Intermedia, Storyspace and Microcosm. To your knowledge, in the development of these non-networked systems, was the issue of typography considered? *(Used only for the Hypertext expert)*

Interactivity

6. A fundamental characteristic of new media is interactivity. What is your definition of interactivity?

7. Is Hypertext fiction interactive? *(Used only for the Hypertext expert)*

8. What is the main difference between print-based interactivity and screen-based interactivity (specifically the web)?

9. Can Hypertext be described to offer non-linear narrative? *(Used only for the Hypertext expert)*

In a response to an open question in my questionnaire, regarding key issues for the development of the framework, a prominent media artist and writer mentioned that 'interactivity ...is the key difference between the media of print and screen...'

10. Do you agree with this view, and if yes how do you see it influencing the way designers utilised type for screen? If no, why?

Letterror (a collaboration between two Dutch designer and typographer, Erik van Blokland and Just van Rossum) is a strong advocate of designers and typographers taking control of their own programming destinies by encouraging them to write their own program. The majority of their typefaces are 'intelligent' and responds to user input that alters the form of the typeface.

11. While this may be one method to free designers from the constraint of the technology, what other ways or perhaps disciplines should designers look to for future development of screen-based typography?

F. Conclusion

1. And finally, do you have anything more to add to the topics, which we have discussed just now?

If you don't mind, I might need to contact you at a later date for your comments on a draft report of the interviews. Your comments will then be incorporated into the final report of the interviews, again on an anonymous basis unless you wish to be specifically mentioned.

5.2 Interview Transcript Sample 1 (Digital Typographer 1)

This is an interview transcript between the researcher and a digital type designer on the 2nd of July 2003. This interview was conducted through AOL's Instant Messaging software.

[Start]

Joyce Yee (JY): Good Morning. Are you ready for the interview?

Type designer (TD): Yep

JY: Ok. Thank you once again for agreeing to take part in this interview. Your participation is extremely important and your comments will contribute significantly to the outcome of this research.

TD: Ok

JY: I mentioned in my first email that the interview would take about an hour to conduct. However, there is a possibility that it might overrun. I will try my best to keep it to the allotted time.

TD: Ok

JY: Before we begin, I think it's best to spend the first few minutes to give you an idea the range of topics I hope to cover. There are 5 parts to this interview. They are:

1. Introduction & Background – An introduction to the PhD research and restating the aim of the interviews.
2. Typographic understanding & knowledge (print and screen)
3. Future role of screen-based typography
4. Conceptual typographic framework development
5. Framework building blocks

I shall be saving the text of our conversation for analysis. Is this agreeable to you?

TD: Yes.

JY: Ok. Before we begin, I must do the very English thing and ask about the weather in The Hague. It's absolutely horrible in Newcastle!

TD: It's miserable here too. If you're on the new apple iChat AV I could show you a picture.

JY: I'll take your word for it! I don't need another damp and rainy picture! So, would you like me to refresh your memory on the purpose of this study?

TD: Yes please.

JY: Ok. Here goes...

> This interview is part of my PhD research project at the Centre for Design Research, Northumbria University. The PhD research investigates the relevance of typography in the face of technological and social changes brought on by the digital revolution. Its primary aim is to develop a practice-led framework for the application of typography in screen-based interactive media. The purpose of this survey is to enquire about your attitude towards the relevance of print-derived typographic knowledge and skills for the application of screen-based typography. The structure of the interview is based on key findings of a questionnaire survey sent out to Graphic/New Media Designers and Educators.

TD: Ok

[A] Introduction & Background

JY: Right, now that we got that out of the way, can you tell me a little bit about the work that you are involved in at the moment?

TD: A large typeface project for the University of Minnesota, a couple of websites, a couple of small print jobs, one or two animation projects (with outrageous deadlines) and development of type-production related software.

JY: Hmm sounds like you have a busy summer ahead.

TD: Yes. Most of it is due next week.
Summer includes a talk at typecon, a trip to Lego land and a conference in September on tool development.

JY: Hmm I know the feeling. I used to have impossible deadlines in design consultancies. Working in a university has its advantages now! Yes, I know about the Typecon. Unfortunately I cannot afford to go for it. Hmm tool development, is that specifically on typeface production?

TD: Tools: yes. The market is too small for large software vendors to be involved in it. There's one, but we (a group of small foundries) have learned to deal with this ourselves. Deep niche software - very important for a very small group.

JY: Do you find the interest in this growing? Or is typography still a very train-spotting activity?

TD: Type design is a smaller discipline than typography. If typography were trainspotting, typedesign would be about knowing the train drivers by name. There's a few more people and companies involved, but basically it's the same group.

[B] Level of Typographic Understanding and Knowledge

JY: What does the term 'typography' mean to you, then?

TD: The application of type in any medium with any method - make that the application of letterforms.

JY: Ok. Got it. Can you give some examples of the 'methods' you mentioned?

TD: Different ways of applying letterforms, font technology, line layout, unicode, postscript. But also lettering, drawing, illustration.

JY: So, ranging from programming to hand drawn letters?

TD: Anything that can put letters on a row. Includes various printing techniques as well, stamps etc.

JY: OK. A very wide definition. Did it expand with the introduction of the digital media?

TD: The digital media were added to the list, it doesn't change the basic questions in typography: where do you put the letters? How big are they? What's the hierarchy, what's the structure, what letters, which reader.

JY: What are your observations about current typography found on the web?

TD: It's getting better, as long as it is in Georgia or Verdana. CSS is offering more control and designers seem to take advantage of it. There's a lot of crap too, but that only reflects the amount of crap available in other media.

JY: Why Georgia or verdana? Because it was designed specifically for screen? Do you think we need more typefaces designed for that purpose?

TD: G & V because they were hinted for screen, but also because they're distributed with Mac and Windows and it's a safe bet that they'll be available on a client. More typeface like this: sure, but who'll pay for them. Verdana cost over $1M to develop.

JY: Really? I had no idea.

TD: Microsoft sponsored the fonts because they want their browsers to have some consistency. But it's not that smaller companies can decide to invest that much.

JY: So do you think Microsoft is essentially driving the development of screen-based type?

TD: No.

JY: Why not?

TD: Well, Microsoft sponsored the development of a couple of typefaces for screen and they're doing interesting stuff with ClearType. But W3's CSS standard is just as important, perhaps even more so because it is an open standard. Microsoft does not make open standards.

[C] Role of screen-based typography

JY: Findings from my recent questionnaire survey (which you kindly participated) indicated that the graphic and new media designers predominantly treat type as their main tool of communication in screen-based media. Designers are still focussed very much on the readability and legibility issue for screen-based media. Does this correspond to your own observation?

TD: Yes. You say, "still focus" -- why?

JY: Because although the readability issue is not medium specific, I feel that it has been a major concern of designers, and rightly so. However, I feel that the digital media offers much more opportunity to perhaps experiment more with interactive nature of the medium.
And my feeling is that it is perhaps a 'crutch' that designers (like myself) hand on to, too tighly.

TD: I think it is impossible to turn all words into images.

JY: Maybe it's my print background showing through. It's hard to shake the feeling that I rarely have much control over the designing for the web. No I do not propose to make all type as images.

TD: Text remains a very efficient way to get ideas across. Anything that's a bit more complex than "EXIT" needs text.

JY: But perhaps we could see more of it? Print was reflection of a very literary tradition. While I think the digital media has made us more oral and visual.

TD: Still, language is sequential. There's sentences, beginnings, ends.

JY: So is type in the digital media confined to information carriers? Yes language is, but not narrative. Narrative that involves text and images are increasing becoming more non-linear.

TD: Are they?

JY: How about Hypertext fiction, RGP games? www.memexengine.com

TD: Any good examples of hypertext fiction? I think most of it is cute but nothing like a good read. Technical documentation is non-linear.

JY: You mean like software manuals?

TD: Yes. But stories tend to fall apart when they're left to the reader to assemble.

JY: Non-linear narrative e.g.: Life's a User Manual by George Perec (print)

TD: I'm sure it has its place in literature; I just never saw it work well in stories/

JY: Afternoon: a story by Michael Joyce (hypertext fiction)

TD: Ok. RPG's aren't stories, are they?

JY: I think if you read Borges, you would find some indication of it. So it is not new, has happened in print. Though yes, I must admit, hypertext fiction does have some way to go to engage like print.

TD: I think if it were capable of engaging it would have done so already

JY: Hmm, but they allow you the user to create your own narrative as you go along...(of course it's all been directed by the games producer). I am always curious about how much should a designer play in helping create and direct the narrative, and more so, in an environment like the web.

TD: A fragmented story designed well is still going to be a fragmented story. I think that's a fundamental problem in trying to do this. Telling a story is a creative act, which people get into because they're shown things they can't think of themselves. When the story becomes interactive, all decisions are left to the reader who usually can't do it. The interactive story is as exciting as the reader can make it. Games usually have a sequence, the player gets some freedom but if they don't follow the pattern there's no progress, even RPG's have a deus ex machina to move things along.

JY: Well, that's where a balance needs to be achieved: between how much is directed and how much is left to the user. A good interactive narractive just the right invisible hand to direct but enough empty corridors for users to explore.

TD: Maybe.

JY: Ok, I guess you still need convincing. Nevermind, on to the next point.

TD: Ok

JY: While the technology used to create typography offers fewer restrictions to the creation of typographic forms, our expectation of typography (from a designer's and a user's point of view) has not changed significantly from a print society. Do you agree with this?

TD: Um. Lemme think.

JY: Take your time.

TD: A lot of the visual language from the web comes from television - simple animation, bright colors, and cheap filter effects. One area that has changed is again, technical documentation. It started out as online versions of printed documents. But search apps and hypertext changed that completely. By now it is impossible to work without hyperlinked documentation.

JY: Yes, so it has changed the way we read and search for information?

TD: Searching and finding primarily. Reading only up to the point that it's no longer wise to print out technical stuff. Just keep the URL, or better, just remember the search terms. Google and the like are turning the hypertext model upside down again. There are just too many pages. Too many to be included in every document. Hyperlinks work locally. UP, NEXT, PREVIOUS, INDEX, but not 'give me another 10 like these"

JY: I would say our reading habit has moved more into scanning for bits of useful info to actually having to perform more detail search.

TD: Yes

[D] Typographic Framework Development and Approach

Reappropriation of existing typographic knowledge

JY: In Lev Manovich's book The Language of New Media, he stresses the connections and continuities of old into new media. Specifically, he has used the art of the cinema to highlight this point. While Jay David Bolter and Richard Gruisin's book; Remediation, argue that visual media achieve their cultural significance precisely by paying homage to, rivaling, and refashioning (remediating) such earlier media as perspective painting, photography, film and television. Typography for screen is essentially going through the same process of appropriating the print-derived knowledge into a usable format for screen.

Apart from changing how we search, read and store information as users, what impact does the digital media for typographic designers? 'had for typographic designers?'

TD: A certainty that everything can and will look different. A watch shows a page different than a 25" monitor.

JY: Do you think designers are taking up this opportunity in general?

TD: I don't think it is an opportunity -- it's just a constant of the online universe. The designer is required to make compromises between known and unknown parameters. It's a requirement.

JY: Yes, I would agree. But not all the designers understand this requirement. You may remember, one of the main enquiries of the questionnaire was to investigate if the new typographic framework should be medium dependent or not.

TD: Now I'm wondering what the framework entails?

JY: (So am I!) While there is strong consensus that print and screen-based media are different, the designers' approach to typography should not be any different because type is used to communicate a textual message. However, there is an opposing view, which believes that the need to understand and cater for the characteristics of screen-based media should be foremost in the consideration of the framework.

TD: I see.

JY:I know these 2 views are not mutually exclusive but what are your views on this finding?

TD: Exactly.

JY: Again a fine balancing act?

TD: Typography has always been a technology problem. It's about using the widget of the year in such a way that the eye and brain find the end results useful to look at.

JY: So you think it technological driven?

TD: So when screens are hip, designers need to know about screens and what they can do with them. At the same time they need to keep in mind that people with eyes and brains need to read the text. Technology offers the tools, biology offers the limitations. That doesn't mean that we can only repeat what we did before, but that we need to judge each new widget for its merits.
Type and writing are the results of thousands of years of interaction between making shapes and looking at them. If you look at all different writing systems in history, cross culture, it usually ends up with some concept of contrast, light/dark, foreground/background, sequence.
I believe that this is because all human eyes and brains are wired the same way, and favor particular shapes over others.

JY: Of course our biology does not change, but our behaviour does over time. As designers, we just need to be much more aware of the user's actions and more so in the digital medium.

TD: Screens won't change the biological part of the reading. It offers the chance to tickle the more primitive parts of the brain by offering motion, but has such a strong reaction that it should be used with measure. Try reading a column of text on screen next to an animated ad.

JY: Again, more user research, which is hard to budget into projects these days.

TD: Or just common sense.

JY: Perhaps, but from experience, 'common sense' may not be so common. Going back to your question on what the framework entails, I am trying to develop a multi-disciplinary approach in its development. As you are aware, the characteristics of new media have long been in existence in established disciplines such as the fine arts, filmmaking and literature. Do you think that these kinds of influences are beneficial to the development of new media content?

TD: Sorry, what specifically do you mean by new media?

JY: Digital content, specifically interactive media, such as the www and interactive TV

TD: "Multi-disciplinary approach in its development" --- like architects being involved in web design and such?

JY: No, in taking the ideas and approach from other related medias, such as as mentioned before, Hypertext theory and Film theory.

TD: I see.

JY: Brenda Laurel has likened the computer as theaters. Using exisiting metaphors and anologies to better understand the medium for which designers have to design for. All the time, we have always used the print analogies. Well, I have anyway.

TD: I don't think I do.

JY: No, I don't think you do as well. Which could explain why you and Just are developing artefacts that are very different to how we would approach new media content. Unfortunately not everyone has the opportunity or the curiosity to look beyond the boundaries.

TD: Kids will start playing with whatever medium is new when they've got the right age (about 4) and take it to new levels without being bothered by what happened before. (Sorry, still answering the previous note) At a later age they might see parallels between what they're doing and older work, perhaps even in different disciplines.

JY: So you think it will be a natural evolution, but would it not take another 10 years for new generation of designers to have grown up with the digital medium?

TD: The web has been around for 10 years, that generation is here. There are undergraduate programs in game design, interactive stuff.

JY: What future for the profession of graphic designers then? To be subsumed by interaction design/interface design?

TD: First browser. My generation made a point of kicking at the perceived older generation. I'm sure new media have not changed that.

JY: Do we have to develop new skills such as programming, behaviourist and psychologist? Well, I think it happens in all generation. It's a matter of degree.

TD: Programming: yes. Behaviour: maybe. Psychologist: no.

JY: An element of the framework looks into "interactivity", which is one of the fundamental values of new media.

TD: They're not new skills, they might be new for designers. Someone needs to tell them "this is a really interesting interface, but you realise the users will click once or twice and then leave because it DOESN'T MAKE SENSE"

[E] Framework Ingredients

Interactivity

JY: What is your definition of interactivity?

TD: That the response makes sense.

JY: Ok, not new skills but definately new for designers. It's not a regular curriculum in design programs (last point)

TD: Not just that something happens when you click somewhere. The user needs to be reassured that their idea of the logic of the options makes sense. It's easy to confuse people, and then you're lost. I saw a cute book on usability the other day. Filled with things that are (once you see them)

totally obvious but apparently designers need to be told anyway. That's kind of frightening. Common sense, indeed, is not.

JY: So understanding user behaviour is key! But again, rarely see it being emphasised in design programs. Maybe on the more specialised courses for Interaction Design but not a general graphic design program, designers who will eventually be practising for both print and screen.

TD: True. It's about logic and seeing it in the things you're working on. Many graphic designers cannot design forms. Same problem, for example magazine layout, or newspaper layout.

JY: One of fundamental values of new media is the increase interactivity it 'claims' to offer. What is your definition of interactivity?

TD: You asked already :-)

JY: Yes, but did I get an answer?

TD: The reader is invited to an action, and the response needs to make sense.

JY: Ok, then what is the main difference between interactivity for print based content and with the screen-based content (specifically the web)? Or is there a difference?

TD: Interactivity for print?

JY: Yes.

TD: What do you mean?

JY: Non-existing for print? Some people seem to think there is interactivity for print. Depending on your definition.

TD: There are clever ink particles that make it possible to print moving images on films, pulp.

JY: I feel there is, but interactivity for print is achieved more so in the user's brain and cognitive function while for screen, it's more visual and immediate.

TD: There are ways to guide the eyes along the page to get the reader into the structure, but that's not interactive. The page does not change because it is being read.

JY: Yes, other designers have rebuked me, when I suggested that print has hardly any interactivity. Different schools of thought then.

TD: Ok, in your school of thought, what is the cause and effect in print interactivity? Just curious.

JY: Again, looking at narrative. The way we read text on print may not be linear. For e.g. in magazines, we skip and read articles according to our wishes. And if we take your definition of interactivity "the reader is invited to an action and the response needs to make sense".

TD: The response implying an action on the part of the medium. Does a magazine do that?

JY: Then, in my example, the reader is invited by the author through the reading of the story to make cognitive connections to link the plot and sub plot together. Ok, not a magazine. That's the lowest level of interaction. It makes you turn a page. But if you give them a bunch of stickers with words or letters on it, and let the users stick and compose a message or do what ever they want with it, then it's the second level of interaction.

TD: Can't agree. Coded in the text is a program about the flow of the information. The reader executes that program and decides to turn the page. The program itself does not change.

JY: No, but that perhaps is the third level of interaction, where the action of the user changes the system and is a progressive change.

TD: I think an interactive medium has to have a way for the medium to change the way it operates based on the way the user deals with it: a Turing engine.

JY: Yes, I agree. And I am all for this. However, that does not discount me thinking that print has elements of "interactivity".

TD: All right.

JY: Which is more reason to be really excited about the possibilities that the digital medium offers me and I think more designers should be. But again, because of my lack of programming understanding, it's often difficult to design systems to react and change according to the user.

TD: You're talking about the reader reacting to the text. That is not interactive, it's only half.

JY: Physically no. Philosophically, the text constantly changes in the reader's mind!:-)

TD: All right, then a rock is also interactive.

JY: Well, at least I know you feel strongly about this aspect of interactivity. Unmovable like my interactive 'rock'

TD: I'm not disputing that the text changes in the mind of the reader. But that's not enough to label the medium interactive. Because how would you define media that *do* respond actively?

JY: Living.

TD: Another reference to Turing. :-)

JY: Yes. He was way ahead of his time. So, I know that most of your typefaces are essentially 'interactive' and live. However, if you were given a choice to design the most perfect and ideal typeface (leaving behind any technological or other constraints) what would its key features be?

TD: Aside, more philosophy: leaving constraints behind would leave the typeface impossible to judge, let alone say it's perfect. IMO a typeface is a technological thing.

JY: Ok. Back to the issue of technological boundaries. But do WE not design technology?

TD: Yes we do

JY: Which brings me to the next point: Letterror's work has been called 'programmatic'. Judging from your writings, it seems that you and Just are strong advocate of designers and typographers taking control of their own programming destinies by encouraging them to write their own program. Would this be a fair observation?

TD: Yes. I've never really understood the programmatic label. But technology has always been the driving force behind type and typography. Technology is made by people. We can sit and wait until someone else makes something useful, but I think that's rather against the nature of a designer. So rather than bitch about things made by others I make an effort to make them myself. My programs are just as bad, but they're a lot closer to my requirements.

JY: Ok, granted that this is one effective method to free designers from the constraint of the technology, what other ways should designers look to for future development of screen-based typography?

TD: Did you look at the link? This is a new typeface with 3 axes of control.

JY: Ohh, Hello back.

TD: One big step in screen design is going to be the fact that screens become paper again, moving pixels on paper.

JY: You mean the almost paper like membrane that you can turn like a page?

TD: Yes

JY: Yes, I have heard of that. Is the typeface up for release yet?

TD: There's development to make it printable, using presses of some sort. Print circuitry straight on the paper. We're presenting it at typecon in a couple of weeks.

JY: And where and how can you change the axis?

TD: Did you play with the controls?

JY: Yes. Really fun! Written in python?

TD: The slider like <<-------•------->> thingies. Written in python. There are also two interfaces in which the font responds to the weather.

JY: How do you envisage it being sold to other people? Would they need to download a programm to change the axis?

TD: So that the text will look differently based on the wind, temperature.

JY: Really? Where does it get the data to respond to the weather?

TD: This can only be live online.

JY: Do you access a live database?

TD: Yes

JY: Great!

TD: Weather

JY: How does it 'talk' to the database?

TD: Eh, Internet? It's all on the web. This is the source

JY: Ok, which weather is this?

TD: Scroll down

JY: The Netherlands's or a city's?

TD: MINNESOTA STATE WEATHER ROUNDUP...

JY: Ah, got it. Hmm very interesting indeed. Did you have to get permission to access the database? We were trying to do something similar with a CD-ROM.

TD: Online. There is a lot of weather data available online. People-readable as well as machine-readable.

JY: The CD-ROM documents a place, like a walk in the countryside, and the idea is that the user could access and know what's the weather is like when they want to go for a walk.

TD: Sounds like a cdrom is the wrong medium for that idea?

JY: Hmm, not if you want to transmit heavy media such as movies.

TD: A real project or a research project?

JY: It's still difficult to put in good quality movies on the net, unless you expect the user to have an ISDN or ADSL connection. In the UK, we are still behind in implementing broadband, unlike the US. As a research, project, thought trying to sell it to tourism authorities to get funding.

TD: You're expecting the user to have a computer and a cd-rom-- you can't help make assumptions about hardware.

JY: Yes, but you are also making the assumption of them having a good broadband connection to get good quality movie stream.

TD: Exactly. You can turn it around and argue that this might be interesting for people who have broadband.

JY: In fact, from our experience, many users are still using very basic equipment, and we always have trouble trying to cater to the lowest technological denominator. Until recently, we are still supporting win 98.

TD: I tell my students about Moore's law and that they should apply to their research.

JY: What is the Moore's law?

TD: Chips will double in speed every 18 months. That means that either they'll cost half in 18 months, or the same money buys twice as much. That has implications for bandwidth as well. It's been true since the early sixties.

JY: Let's hope so. But we still get constant comments that the CD does not work on their machine!

TD: Sorry, I'm awfully prejudiced against cd-rom.

JY: And not because we did not fix the problem. Just that PC has many different sound cards and video cards, which are not standard unlike the Macs. Why?

TD: For the reasons you list. It's a clumsy solution.

JY: So you propose to develop for a high bandwidth audience and hope that more will join up? Can't really say that to the client, I'm afraid.

TD: Heh. I'd argue to develop for an online audience and make the parts that require high bandwidth optional. You can explain a walk without the movie. The movie would be nice, but it is not crucial. That way you reach more people, which I assume, is one of the goals.

JY: Yes. Most of time it's main goal. Hey nice change on your icon. Just noticed that.

[F] Summing up

JY: Well, I think we really have overrun our interview. But it's been such an interesting conversation, that it's a shame to end it.

TD: Back to work!

JY: But I think I have reached to the end of my questions.

TD: Ok.

JY: It's been a real pleasure talking with you.

TD: Likewise.

JY: Do you have anything more to add to the topics, which we have discussed just now?

TD: No.

JY: If you don't mind, I might need to contact you at a later date for your comments on a draft report of the interviews.

TD: No problem.

JY: Your comments will then be incorporated into the final report of the interviews, again on an anonymous basis unless you wish to specifically to be mentioned.

TD: I don't mind either way. I didn't tell you any secrets.

JY: I better let you get on with you work. You must be really busy. Thanks again for your time and letting me rack you brain.

TD: Thanks! Bye!

JY: Bye.

[END]

5.3 Interview Transcript Sample 2 (Interactive Designer 2)

This is an interview transcript between the researcher and an interactive designer on the 17th of July 2003 and the 13th of August 2003. This two-part interview was conducted through AOL's Instant Messaging software.

[Start]

Joyce S R Yee (JY): Hi. I'm a bit early but just thought I try to invite you in first.

Interactive Designer (ID): Hi Joyce. This is new software for me...

JY: What's wrong with MSN?

ID: It doesn't like Macintosh...

JY: Hmm, yes I had that problem. I had to reinsntall MSN again, and to make sure I throw away the preference in the prefences folder (OS9). My OSX is not working well at the moment. Have to spend a few days to clean install it, but no time as yet.

ID: This one works fine though. I've got Tim Fendley from Applied Information Group here too, if he has any thoughts to add.

JY: Sure. Is he hooked up as well? Or is he just next to you physically?

ID: Sat at the desk opposite. He's busy working but may be able to add some relevant thoughts if I ask him.

JY: Ok. Sounds great. Shall we start then?

ID: OK

JY: First of all, thanks for agreeing to take part in this interview. Your participation is extremely important and your comments will contribute significantly to the outcome of this research. Besides, we missed getting you on board the research earlier on.

ID: Pleased to help. Hope I've got something useful to say. Sorry about missing you earlier :-(

JY: Oh no problem! Before we begin, I think it's best to spend the first few minutes to give you an idea the range of topics I hope to cover.
There are 5 parts to this interview. They are:

1. Introduction and Background – An introduction to the PhD research and restating the aim of the interviews.
2. Typographic understanding and knowledge (print and screen)
3. Role of screen-based typography
4. Typographic framework development
5. Framework Building Blocks

I shall be saving the text of our conversation for analysis. Is this agreeable to you?

ID: That's fine. I figured you would do that.

JY: Ok. It's a formality to ask and get a recorded response. Before we begin, would you like me to refresh your memory on the purpose of this study?

ID: Yes, a brief overview would be useful.

JY: Ok. Here goes...:

> This interview is part of my PhD research project at the Centre for Design Research, Northumbria University. The PhD research investigates the relevance of typography in the face of technological and social changes brought on by the digital revolution. Its primary aim is to develop a practice-led framework for the application of typography in screen-based interactive media. The purpose of THIS survey is to enquire about your attitude towards the relevance of print-derived typographic knowledge and skills for the application of screen-based typography. The structure of the interview is based on key findings of a questionnaire survey sent out to Graphic/New Media Designers and Educators.

Is that all right? Or do you need me to elaborate?

ID: That's fine, thanks.

[A] Introduction & Background

JY: Right, now that we got that out of the way, can you tell me a little bit about the work that you are involved in at the moment?

ID: I have three or four principal clients at the moment.

1. The Science Museum
2. The Design Council
3. Helen Storey Foundation
4. Warwick Arts Centre

And the projects I'm working on are...

JY: Is this company your own set up or are you working in partnership with someone else? It seems that it was rather quiet on the news front after your departure from AMX Digital.

ID: Science Museum - Worked as Art Director and sort of Interactive Editorial Co-ordinator to develop interactive components of the Sparking Reaction exhibit at the Sellafield Visitor Centre. This included an 'Immersive Cinema', information kiosks and a website. I'll carry on and give details for each of the clients then come back to that question.

JY: Ok. Hi sorry. My app crashed!

ID: Helen Storey- I've developed with Helen an interactive installation that is a 'game' called Whisper exploring the nature of human creativity. It is currently on show at Glasgow Science Centre. Did you get the stuff about Design Council?

JY: No unfortunately. Can you copy it again?

ID: Warwick Arts Centre - Developing an in-house multi-screen information system, which co-incidentally also becomes a digital venue in its own right.

The Design Council - I am working on a few projects including writing about 'Graphic Design' for their new website. Speaking at a number of seminars (co-inciding with the various openings of the touring Great Expectations exhibition of contemporary UK design) on the topic of new media and in particular interactive television and other non-web based media developments. Tim is working on the design of the Design Council Intranet. Now on to me post AMX...

I am now an Independent Designer again, but work in association with other individuals or companies as appropriate. My focus is project-orientated rather than business development. I work from home, but also have desk space here at AIG: Oh yes, and I'm Visiting Professor in Interaction Design at the RCA, but that's a whole other story...

JY: Gosh, all your projects sound really exciting! I supposed your new working arrangement gives you more freedom in terms of client selection. Do you still teach at St. Martins?

ID: Exactly. I am no longer constrained by a large organistaion, nor distracted by it.
I am still officially Visiting Professor, but it is more cosmetic than my role at RCA. I have never really done any teaching there. I've given the odd lecture, attended seminars and was external examiner for about five years on the MA Communicatioin Design course.

JY: I see, so you might have examined my work when I was there in 97.

ID: I think my final year was 96. I would have to check.

[B] Level of Typographic Understanding and Knowledge

JY: Ok. Back to the subject...What does the term 'typography' mean to you?

ID: Any language oriented communication involving the use of drawn symbols.

JY: What are your observations about current typography found on the web?

ID: It is either 'function' based and dictated by the quality of 'local' bitmapped fonts, or it is aesthetic oriented and constrained by the 72dpi screen resolution and the subsequent need to anti-alias fonts in order to trick the viewer into thinking the typography has some sophistication.

JY: Is this approach any different from its print version? Mostly, it's either function-based ie legibility or more image/visual based.

ID: In differs in two ways. It is hard or impossible to define what a client computer's text settings are. Print has much higher definition and therefore greater potential for detail and 'quality'.
Also print has no time based component or contextual hyper-linking capability.

[C] Role of screen-based typography

JY: Findings from my recent questionnaire survey indicated that the graphic and new media designers predominantly consider type as their main tool of communication in screen-based media. In particular, the issue of readability and legibility are the main concern of designers when using type. This seems to indicate that designers are still pretty much tied to making type work in the traditional (print) manner. Does this correspond to your own observation?

ID: I wonder if that is because the keyboard is the main input tool for new media, and more recently print based design?

JY: So are you suggesting a change of input tool might change our preception of type? Perhaps a drawing tablet?

ID: I wonder how things would develop if Newton or Palm was afully integrated input device alongside the keyboard and mouse?

JY: To be honest, I think I type faster than I hand write! Isn't that ironic?

ID: More than just a drawing tablet, but something that interprets and adds intelligent depth to conventional drawing skills. I write more now that I can (sort of) type...

JY: I feel that while technology used to create typography offers fewer restrictions to the creation of typographic forms, our expectation of typography (from a designer's and a user's point of view) has not changed significantly from a print society. Generally, designers still view and judge typography in the context of print-derived rules. Would you agree?

ID: Possibly, but the main issue is perhaps that because of increasing familiarity with 'fonts' and 'typography' there is a greater understanding and consequent creative interest in the whole notion of typography whether it be print or screen. Typography was previously a well-guarded black art. There is simply more heritage to print and 'designers' are still enthused by 'beautiful objects' hence there continued interest in print. In this way the new media has 'liberated' print to follow a more aesthetic based pathway. Pure 'information' is increasingly found within the domain of the screen.

JY: Is there a growing interest in typography? From my past conversation with others, it seems that the standard of typopgrahic knowledge in students gets worse each year. Perhaps the interest comes from outside the design professsion?

ID: Because they think they know everything already. There is definitely a greater awareness of 'typography' per se . Whether or not students care to develop real skills in this area has always been a contentious issue. Again because of familiarity with fonts via computers there is also unprecendented interest in typography outside the design profession.

JY: Do you think this is good for typography?

ID: Neither good nor bad really. It is just a given.

JY: In your opinion, will it be designers or users that will be the primary driving force of future screen-based typography?

ID: Ultimately designers, but because of the need to satisfy user requirements. There is no such thing as a designer without a client.

JY: Yes, I would agree. A designer without a client is an artist!

ID: Or an author.

[D] Typographic Framework Development and Approach

Reappropriation of existing typographic knowledge

JY: In Lev Manovich's book The Language of New Media, he stresses the connections and continuities of old into new media. Specifically, he has used the art of the cinema to highlight this point. While Jay David Bolter and Richard Gruisin's book; Remediation, argue that visual media achieve their cultural significance precisely by paying homage to, rivaling, and refashioning (remediating) such earlier media as perspective painting, photography, film and television.

ID: In what way? "All art is theft", someone once said (me!)

JY: New media has elements based or developed in other media such as time-based (cinema) and non-linear narrative in traditional literature such as Borges and Perec. Typography for screen is essentially going through the same process of appropriating the print-derived knowledge into a usable format for screen. Do you agree?

ID: I would argue that 'real' developments in authorship for new media are yet to happen. It is the 'playstation generation' brought up their entire lives with the knowledge and understanding of true screen based immersive interactive programmes via playstation et al, and importantly who are not yet of significant age to contribute in a real sense to the world stage of media and communications. Technology is what didn't exist when you were born. Consequently you and I are still struggling in the 'technolgical age', whilst radical future developments cannot be predicted. This generation will stun us all in due course.

JY: So leave it up to this new digital generation to evolve it? Where does that leave us, the existing designers, authors and users to deal with this new medium? Or does it not matter how we get on cause the new ones as you suggested shun our ideas and us?

ID: So, yes we all recycle the past whilst tomorrow's youth will create the future. We can but remind the new ones of critical areas of concern, which they will shun or embrace or edit at their will. Our job is to accept the inevitable and offer encouragement. We can continue to be a sounding board, or springboard for 'the revolution'.

JY: So, what is typography's role in light of the changes brought on by the digital technology? Purely information carrier? Leave the expressive bit to moving imagery and sound?

ID: I don't think it is a simple as that to mentally separate the two. Information of many kinds other than simply 'language' is contained within typography that is why it is called 'typography' because it is more than just writing. Typography can therefore happily embrace imagery and sound, and vice versa, in order to achieve its many goals.

JY: Have you seen any good examples of this anywhere for the screen medium?

ID: The fact that typography still defies definition is what continues to make it interesting. I've probably seen some good examples indicating these future trends, but my powers of recall are useless. I'll remember later I'm sure.

JY: One of the main enquiries of the questionnaire was to investigate if the new typographic framework should be medium dependent or not. While there is general consensus that print and screen-based media are different, the designers' approach to typography should not be any different because type is used to communicate a textual message. However, there is an opposing view, which believes that the need to understand and cater for the characteristics of screen-based media should be foremost in the consideration of the framework. I know these 2 views are not mutually exclusive but what are your views on this issue?

ID: People used to ask me "when did you give up graphic design?", as if working in new media was somehow a different discipline altogether. It is this misunderstanding, which leads to the two, views you outline. I argue for an integrated approach to communication as increasingly the use of many media types are interlinked and inter-related within any given project. In this way understanding of the constraints and benefits of the various media components must be implicity understood for meaningful work to be produced. Many of the areas currently under investigation

are still 'experimental' whilst we all come to terms with the requirements outlined above. This makes them no less important, but whilst they are 'visible' in this way we are looking at the messenger not the message. The old adage "good typography is never noticed" probably still holds true.

JY: When will there be a shift from the messenger to the message?

ID: Now, tomorrow, the day after. Ask any thirteen years old. The only thing you can guarantee when predicting the future is that you will be wrong.

JY: So I shall have to out a disclaimer in my thesis saying: Don't take me seriously, it all be wrong!

ID: I do at the beginning of every lecture I give! "Everything I tell you may be wrong".
If we always knew the outcome we would be terminally bored. However it is relatively easy to know where to look for surprises...

JY: Going back to what you were suggesting, by treating this media with a more intergrated approach, I am suggesting a more multi-disciplinary approch to this. This is because as I mentioned earlier, some characteristics of new media have been in existence in established disciplines such as the fine arts, filmmaking and literature. Do you think that these kinds of influences are beneficial to the development of new media content?

ID: Of course. Integration of overlapping disciplines is what 'convergence' is about. It is no longer relevant to isolate individual expertise. That has been a problem for typography for too long. Typographers despair of the world and their lack of understanding, but attempt to preserve their craft in a retrospective and insular way. I once said that there is no such thing as a bad typeface, only misuse leading to confused communication. The problem with typographers has been that they always want you to agree with their particular aesthetic sensibility. If you can't predict the message then you can't pre-define the graphic requirements. Designers respond to communication needs and therefore need to have a very broad understanding of all communication components in order to select the right tools for the job.

JY: I do agree that in particular, typographers can be very insular in their thinking and development. To a lesser degree, so are all designers. Which discpline do you think has had the most influence on the design of new media content? (Apart from print)

ID: I love generalisations: all designers wish they were artists in the same way that all advertising creatives wish they were film directors. Neither desire is healthy for the communication industry. As you indicated at the start of this piece, the discipline of writing has so far had an enormous influence on the design of new media content, but as I've argued this has also been a hindrance thus far. The Internet is still a series of interlinked pages from a book.

JY: How about hypertext fiction?

ID: Is there any? I will have to go to my one o'clock meeting now. We can talk later or you can send me more questions by email. This has been fun!

JY: Ok, I will send you more by email. We shall continue more later on.
Thanks again!

ID: Ok. See you later

JY: Or we can chat after lunch. I'll try you after 3pm then. Enjoy!

ID: I have to be somewhere else this afternoon. Maybe tomorrow afternoon is better?

JY: Ok, fine. Tomorrow afterrnon. What time?

ID: I'll email you.

JY: Ok.

ID: Bye for now.

JY: Bye.

[Part 1 concluded]

Chat Transcript - Part 2 (13/08/03)

JY: Hi. How's the jet lag?

ID: My foolproof system has worked once again...

JY: Which is?

ID: Sleep UK time whilst in Oz. Perfect for afternoon meetings, evening conferences, and parties....

JY: Hmm, not a bad idea, though my dad goes one-step futher, he keeps his watch on his own local time...

ID: I'm good at mental arithmetic.

JY: I tend to not do very well when I come back from Malaysia...there is an 8 hour lag. Hmm, did you receive our last chat transcript?

ID: I guess it's all in the preparation, and how long you've been away from here...
Yes I got the transcript, but I'd kept my own copy anyway!

JY: Ok. Great. I was reading it through again. Shall we start again? Do you have any questions about the questions before then?

ID: Excuse me must take phone call... back in a tick.

JY: Ok.

ID: Back already. Sorry, but I got the transcript but haven't read it through since last time. :-(

JY: Do you want to quickly go through it or do you just want to carry on? We stopped at the point where I mentioned something about Hypertext fiction...and you said, 'is there any?'

ID: Shall we just carry on? Spontaneity is good. You type too quickly...
So, 'is there any?' I should be aware of?

JY: Have to...have to deliver an 80,000 word thesis at the end of my 3 years! Yes, some hypertext fictions have been around for about 5 years or even longer. Started with hypercard - remember that Apple software? And if you go to www.eastgate.com, they sell and list a number of recent hypertext fictions. I think they are developed with their own proprietry software designed to create hypertext documents and stories. Though some writers have actually moved to using flash to create the stories.

ID: Of course I remember HyperCard, and SuperCard. Big fan. I've recently been collecting old stacks, from my friends at Cognitive Applications. I was always interested in visual material rather than text only. Remember 'Cosmic Osmo', an interactive stack about a little guy on a mini 1-bit virtual world? If you type too fast I'll never get to answer your questions...

JY: s-o-r-r-y---- Hmm, have not heard of Cosmic Osmo. Maybe before my time? When did it come out?

ID: I also have big collection of early Expanded Books and CD-Roms from the Voyager Company in early-mid nineties, although I don't think they are generally original hypertexts as such, but ground-breaking all the same. Cosmic Osmo was before 1990, I know...
Pete Girardi at Funny Garbage did great CD-Rom called 'Blam!', which was interactive magazine/storybook, circa 92.

JY: The reason I brought up hypertext is that I see a close relationship between screen-based text and hypertext. I mean the possibility of mutiple narrative must be interesting to designers. The way I see it, is that while print typography is closely linked and even taken to be text, they may be a similar kind of relationship between screen type with hypertext. What do you think?

ID: Hypertext is open-ended by default, or else endlessly, infinitely branching, or looping... You would have thought it would be interesting to designers, as way of controlling and contextualising video and visual material. I've been saying this for a dozen or more years, but graphic designers seem to be hung up on objects and/or aesthetics, and are still confused by the new media.

JY: You mean just creating beautiful artefacts? Rather than experiences?

ID: Or the experience of artefacts. That is why they love the sensual animation of flash. The message is seemingly always secondary to the format.

JY: Do you think this approach have been accentuated by the introduction of new media? Crashed again!

ID: All is lost?

JY: No I think I saved a version before it crashed. Let me check. Yes but did not get your answer.

ID: Ok... again. It's a first response to the new media, to explore the facets of the technology. When it is second nature then we will see people beginning to express themselves using it, rather than just use it to show how great it is.

JY: Here comes the million dollar question...so what will happen to typography when it becomes second nature to us?

ID: If I can predict that I will become the new Marcel Duchamp...I look to the 'Playstation Generation' to show me.

JY: Ok. So how has technology affected the role typography will play in new media content?

ID: In every way you can imagine, and in ways we can't yet imagine. The role of typography is to both inform, and to imbue language with the subtler yet more expressive meaning(s). Adding a time based element and multi-strand, multi level components increases the complexity yet gives a broader pallete to that ability to extend language beyond mere sign posting. In that respect it is more akin to old fashioned story telling where the narator brings his own expression to language and the audience adds his/her imagine to the received wisdom.

JY: Would that point to more interative narrative experiences, I wonder?

ID: I believe so. The receiver of information, and more importantly 'how' and 'what' he/she receives is probably more important than how the narrator tells it, or the designer shows it.

JY: I suppose, one of fundamental values of new media is the increase interactivity it 'claims' to offer. What is your definition of interactivity?

ID: I was just about to address that, so I will...interactivity implies the complicit involvement of the audience. In that respect work is only truly interactive if it allows for that audience to modify or alter the flow and quality of information. Otherwise it is merely 'interruptive' or simply multiple choice rather than truly immersive. Sorry about using the usual 'buzzwords' but they do allow us both to immediately comprehend. That benefit of 'language' I guess...

JY: So print is not interactive by your definition?

ID: It can't be. It is complete. A 'closed book' you might say. Hence the notion of getting something down 'in black and white' as an expression of finality. Of course it is still open to interpretation...

JY: What examples are there which demonstrates the truly 'immersive' experience? I know most of what I have seen is as you say, 'interruptive'.

ID: I believe that only PlayStation games are approaching being immersive and interactive, here we truly 'control' the on-screen activity. The sad thing is the closed view of games developers who still dismiss the broader interest of the world at large and choose to ignore anything 'arty' or educational, or information based in favour of more games where you drive faster, play better golf, or kill ore aliens. The games platform is truly amazing, it has rapidly worked its way into every day lives, yet because it is still seen as 'juvenile' it is not readily understood nor embraced by informers, educators, nor even entertainers on a broader global stage. Sorry about spelling, can't type.

JY: Mine is worse, I think. I think the reason why games developers have ignored other forms of content is the lack of developmental money in it.

ID: Also of course all those graphics and video based 'creative' applications are immersive and interactive. I don't believe there is a shortage of development money. The games industry is a rich industry, richer than other media industries, which are in decline. Tried publishing a book recently?

JY: Well, there is a shortage of money developing games, which are not shoot-em-up, or drive as faster car...

ID: Yes, it is a matter of educating the market in those areas. But we have an audience growing up who will DEMAND the information in those forms, so we better get thinking to the future.

JY: I am not sure what you mean by your last post. Games developers mostly used c++ and not flash action script.

ID: I don't care about the technology. Ultimately that does not concern us. I'm talking about the way in which communication takes place and remotely connected, broadband, immersive world that will be familiar and 'second nature' to todays, and tomorrow's ten year olds. They will grow up and show us how to use this stuff, not by trying to show us, but by not expecting anything less.

Technology, which is what didn't exist when you were born, will keep up and as such is not really our concern here. Technology is actually moving way faster than the generational shift required to comprehend and exploit it.

[E] Framework Ingredients

Interactivity

JY: In a response to an open question in my questionnaire, regarding key issues for the development of the framework, a prominent media artist and writer mentioned that 'interactivity ...is the key difference between the media of print and screen... and understanding how it would be the first thing a designer should understand before understanding how graphic design and typography works.' Do you agree with this view?

ID: The first thing that a graphic designer should understand is the fundamentals of 'message', 'language' and 'audience'. All three are required for communication to take place. The issue of 'interactivity' is one, which has become available to designers to address, but the first three fundamentals are still at the root. Take only two of the three fundamentals and something else entirely is at work. Designers are not artists, they can be, but in such cases are probably not designers at that point.

JY: So the element of 'interactivity' is just one that has emerged from the medium and in a sense, part of a 'detail' rather than 'process'.

ID: Exactly and at this moment that 'process' is causing most interest and generating most activity. This is all perfectly natural. As communicators we are familiaring ourselves with the 'language' whilst working out what 'messages' are best served by this language. The reality is that the 'audience' is still not really ready to recieve 'messages' in this language, which is why I still look to the future. It took more than fifty years for a legitimate and truly forward-looking response to the invention of the camera. I don't see any reason to suppose that it will not be true for interactive media.

JY: On this point I agree with you on us having to familiarise ourselves with the 'language'. But I argue that part of this language involves understanding technology that actually created this new medium in the first place. So in going back to you earlier point, I do think we have to address technology. I do not mean having to be software whizz or html expert, but to understand and aknowledge the effect technology has on us, as users as well as designers.

ID: Of course, I agree too. But it is unhealthy to overly dwell on it. Technology has developed so rapidly even in the time I've been interested that certain details are already redundant. It's a case of seeing the wood for the trees, or some other such platitude. It is the opportunities offered that matter not really the origin of those opportunites, whilst I agree that understanding those origins in principal can help liberate our minds to take advantage. As I said before, future generations will take it all for granted and not seek to dismantle the technology first in order to use it. If we spent all our time working out how a plate camera really worked, how silver-bromide film worked etc, we would never get around to making The Matrix 2.

JY: Definately. I totally agree. But I think it must include some level of reflective activity as part of the design process. I think sometimes, designers are forced to do and get on with it rather than encouraged to think about it as well.

ID: That is why I remarked that is perfectly natural to be at this stage in the development, which is still one of familiarising and experimenting. Implicit within that I should have expressed a legitimate need to explore the technologies, which enable the 'language'. It is the established industry lack of comprehension of that priocess and the resulting impatience with the new media that so angers and frustrates me still. On the other hand there is the self serving, blinkered noodling inherent in the new media development community that I am constantly trying to explode and rationalise on their behalf for the benefit of that established industry so that we might all move forward more smoothly, and not create a future divided society. Do we have many more questions? I will have to finish soon. Sorry.

JY: I guess it goes back to letting the medium develops (evolve) rather than revolve. Just one more actually. Have you heard of the letterror duo?

ID: Nice turn of phrase. Yes those two tall dudes operating out of Den Haag.

JY: Hmm, I was not aware that they were tall... but yes them.

ID: They're Dutch. Of course they are tall :-)

JY: They seem to be strong advocate of designers and typographers taking control of their own programming destinies by encouraging them to write their own program. The majority of their typefaces are 'intelligent' and responds to user input that alters the form of the typeface. While this may be one method to free designers from the constraint of the technology, what other ways

or perhaps disciplines should designers look to for future development of screen-based typography?

ID: That's because they are good programmers, and by understanding code, they are able to develop their creative ideas. This is very valid for them but not necessarily valid for someone else. Actually their typefaces are not really intelligent; they only operate within the parameters defined by Letteror. Typography has always interested me because it brings language to life (here I'm using the word language in a slightly different way to above, of course). Within screen based media there has been a heritage of video based material. I'm talking about television of course, which has been with us for fifty years or more. Within the new media there is the opportunity to bring together the best expressive and comprehensive aspects of the language of the printed word, within the emotive and sensual framework of the televisual world, which is one that the comtemporary western world is ultimately more at home with, despite the inherent respect we have for print (there was a limit on the amount of text it would let me send).

JY: Yes, I think that is the promise and possibility new media offers us and hopefully, we will come to an understanding of this medium with the benefit of our past experience with print.

ID: ...and our past experience with the mainly narrative work within film and television, which brings us neatly back to hyperlinked narrative...

[F] Summing Up

JY: Well, that is the last of my questions. Thanks for letting me pick your brains on issues, which have been a very complex problem for me to conceptualise. Yes, oh, one last thing, how about interactive TV? One of my research reviewers have brought up this issue, as I did not specifically mentioned it in my initial proposal. I'm afraid I do not know enough to make a judgment on its development and how it will affect other screen-based media.

ID: I've enjoyed it actually. It has helped for me to be forced to express some of my own thouhgts, for my own benefit. Some things have become clearer. Interactive TV is very importnat for the reasons I touched on above. Every home has one, has several. It is a trusted medium, but ultimately has not developed very much in fifty years. I think the TV industry is really struggling to understand the opportunities, especially within their existing proiduction models. On the other hand the flash noodlers etc have little comprehension of how to really exploit their craft and reach a 'real' future market of far greater size and therefore ultimately more important to society as a whole.

Ironically, one of the most visionary people in that respect has been Rupert Murdoch who has visualised a market here for fifteen years or more, whilst exploiting the conservatism and lack of vision of his audience to fund development of it. Obviously he himself won't produce great work in this arena but he has helped build the arena as much as anyone.

JY: So there is possibility, but still have to be picked up by designers and consumers? But it will be a force to be reckon with?

ID: 'arena' is an interesting word, if we think of those gladiatorial fights of roman times
Yes, watch this space. Again this is why I place so much importance on Playstation, because it works on television.

JY: Ok. Got it. I will keep it in mind...and to include its reference. Yes, I do agree with you on having the time to think through my own issue with design and the industry. That's why I took up research along with practising design.

ID: Me too. I'm just working out how to fund it at the moment :-)

JY: If you don't mind, I will need to contact you later on for comments on a draft report of the interviews. Your comments will then be incorporated into the final report. Yes, funding is a big issue, luckily for me; working at the university entitles me to a free education!

ID: Of course, no problem. You may wish to expand the interactive TV bit too? I 'work' at RCA, but it may as well be for free...

JY: The practical work is not ground breaking! You need real consultancy for that! But at least I am learning the trade of research.

ID: We should swap notes! :-)

JY: Yes, I definately would. In fact if you don't mind, I would like to be able to pick your brains on the progress of my research, if that is alright with you...I promised I won't badger you like I did with this interview...

ID: Of course. If you are ever in London we should meet...

JY: I will probably be down there in late Oct for a conference. If you are around, then sure!

ID: Definitely, let me know nearer the time.

JY: Ok. I better let you get back to work. Sorry to have taken more time again...

ID: Thanks for taking time with me. Bye for now.

JY: Bye. Thanks!

ID: Bye, send the transcript!

JY: Yes, will do. Let me cleaned it up and send you the complete version.

[End]

5.4 Interview Transcript Sample 3 (Hypertext and Communication 1)

This is an interview transcript between the researcher and a Hypertext and Communication Media theorist on the 9th of July 2003. This interview was conducted through AOL's Instant Messaging software.

[Start]

Joyce S R Yee (JY): Good morning. How was jury duty?

Hypertext and Communication Media Expert (HCM): It was painless. In fact I spent the whole morning talking to my neighbour.

JY: Ok. Very good use of the time. Weren't you in court?

HCM: No I never got that far. I just stay in this auditorium, waiting to be called.

JY: Ah...I see. So you were a spare one.

HCM: Yes. I was an extra, who turned out not to be needed. So I was dismissed at 1:30pm.

JY: Like an actor. Ok. Shall we begin?

HCM: OK.

JY: Thank you once again for agreeing to take part in this interview. Your participation is extremely important and your comments will contribute significantly to the outcome of this research. Before we begin, I think it's best to spend the first few minutes to give you an idea the range of topics I hope to cover. There are 5 parts to this interview.

HCM: I'm happy to participate. OK.

JY: They are:

1. Introduction and Background – An introduction to the PhD research and restating the aim of the interviews.
2. Typographic understanding and knowledge (print and screen)
3. Role of screen-based typography

4. Typographic framework development
5. Framework Building Blocks

I shall be saving the text of our conversation for analysis. Is this agreeable to you?

HCM: Yes.

JY: Ok. Feel free to ask questions yourself and to raise any topics that you think are relevant during the interview.

HCM: I will.

[A] Introduction & Background

JY: Would you like me to refresh your memory on the purpose of this study?

HCM: Yes. Please.

JY: This interview is part of my PhD research project at the Centre for Design Research, Northumbria University. The PhD research investigates the relevance of typography in the face of technological and social changes brought on by the digital revolution. Its primary aim is to develop a practice-led framework for the application of typography in screen-based interactive media.

HCM: Right.

JY: The purpose of THIS survey is to enquire about your attitude towards the relevance of print-derived typographic knowledge and skills for the application of screen-based typography. The structure of the interview is based on key findings of a questionnaire survey sent out to Graphic/New Media Designers and Educators.

HCM: Yes.

JY: Right, now that we got that out of the way, can you tell me a little bit about the work that you are involved in at the moment?

HCM: My teaching or my research?

JY: Both please...

HCM: OK. I am teaching in both graduate and undergraduate programs in New Media. These programs are both practical and theoretical...

JY: Is it design-based?

HCM: The graduate program is called Information Design and Technology. But the term "design" has many meanings, as you know.

JY: Yes, I agree.

HCM: We have some faculty with a strong background in design.

JY: So what is your definition of design, in the context of the programme?

HCM: We accept multiple definitions in the program. The people with graphic design background have a more rigorous sense of the term. For them it includes traditional graphic design...

JY: So I take it that you won't be that unfamiliar with some terms, meanings and references from the discipline of design, specifically communications design.

HCM: Visual design, experience design, and even digital art practice. Yes. I know some of that tradition now, with the help of my colleague Diane Gromala. I share with Diane the view that the traditional visual and communication design are very relevant to new media...

JY: I have read a little bit about your research interest...and you seem to be interested in how technology has changed how we read and write in the digital medium.

HCM: That was especially true of my earlier book Writing Space.

JY: Do you take into account some design aspect of this new medium?

HCM: In my two more recent books, I try to do so.

JY: In particular how designers are coping with the transference of print to digital?

HCM: That is, Remediation: Understanding New Media.

JY: Yes, I have read it.

HCM: And my current book project with Diane: Windows and Mirrors.

JY: Though I might need to have a second reading of it. What is that about?

HCM: Well, Remediation deals with the relationship of older media forms (film, photography, TV...) to new media.

JY: Yes.

HCM: The argument is that new media refashion or "remediate" these earlier forms -- even when new media are claiming to be utterly new.

JY: And what does your new book with Diane Gromala talks about?

HCM: The tradition of graphic design for print is obviously very influential on Web design, for example. Now, Windows and Mirrors is specifically about the relationship of digital art to the digital design community in general. It argues that digital art has much to offer to the development of interfaces for all sorts of digital applications.

JY: I see. I will go back to the idea of remediation of old to new later on in the interview. Going back to some definitions...

[B] Level of Typographic Understanding and Knowledge

JY: How would you define typography?

HCM: Let's see... a general definition might be the visual expression of language. Or more specifically "the art of effective visual representation of language." Typography of course originally meant print. But it seems reasonable to me to include the digital medium today.

JY: Yes, but now in new media...the definition has change I suppose?

HCM: When digital designers speak of typography, I think they generally mean the choice and disposition of textual materials on the screen... in addition therefore to the graphics.

JY: Speaking of the web, what are your observations about current typography found on the web?

HCM: Obviously it is generally primitive compared to typography for print. And there are both technological and cultural reasons for that.

JY: What's the cultural reason for that?

HCM: Print typography was generally limited to a small class of skilled craftspeople. But digital typography can be practiced by anyone with a word processor.

JY: Ok. So you are saying non-designers can design type...and why primitive? Doesn't the web offer much more 'freedom' with text?

HCM: Which means of course that people doing word processing and web site layout do not necessarily understand the traditions of effective typographic expression.

HCM: Well, primitive is always bad.

JY: But weren't the non-designers using DTP software to design for print as well?

HCM: To some extent, yes. But this kind of typography for print is also an expression of the digital revolution. Fifty years ago, typography was a profession, wasn't it?

JY: Yes. It was and still is, I believe.

HCM: The desktop computer revolution of the 1980s made typography available to amateurs both for print output and for screen output. In many ways, digital technology has freed people to experiment with mode of expression that used to be limited to guilds of professionals. This is both good and bad.

JY: Ok, this situation is not reversible. There will be more non-designers getting their hands on computers to design. Would that mean the design of web content will continually to go downhill?

HCM: Or rather has good and potentially damaging consequences. No. I think that web design has hit bottom already. :-)

JY: Ok, so the only way is up? Why? What has changed?

HCM: Actually, web design is marvellously eclectic now. There are amateur sites and highly professional sites and they coexist on the World Wide Web, which in this sense is truly democratic. I applaud the diversity and eclecticism of new media in general.

JY: So are you saying the medium has reach a point of maturity to be able to grow out of the 'bottom'?

HCM: But that means that we must tolerate much "bad" design -- "bad" in the traditional, professional sense. I think the Web will continue to be diverse. There will continue to be a need for high-quality design on the Web. For the professional Web designer, who knows the traditions of typography.

[C] Role of screen-based typography

JY: But designers may not be so tolerant...Well, findings from my recent questionnaire survey indicated that the graphic and new media designers predominantly consider type as their main tool of communication in screen-based media. In particular, the issue of readability and legibility are the main concern of designers when using type.

HCM: But not every web site will be designed to this standard.

JY: Does this correspond to your own observation?

HCM: Our students (who are not professionally trained in design schools) tend to be more interested in images and in time-based media and interaction than in typographic expression.

JY: So more visual rather than verbal?

HCM: Yes, visual. And also they want to explore the limits of interactivity in new media design.

JY: Do you see difference in approach and attitude between students who have a non-design background to students with a design background?

HCM: Educational background is very important in this respect. Some of our students are computer programmers, for example. And their approach to design is what I call "algorithmic" rather than visual. Some of our students have humanist backgrounds...

JY: So do you think it is important to have this mix of students to 'break' the tradition of current design paradigms?

HCM: As I said, I am in favour of diversity and eclecticism in new media design. We select our students from a range of disciplines for this reason.

JY: So it is no longer in the domain of the communication designer.

HCM: New media design is so new... was it ever solely the domain of the communication designer? Computer scientists have been doing new media projects for years too. And they have a very different perspective. Couldn't we say that Alan Kay is a new media designer, for example?

JY: I think the difficult part it to integrate these expertises from different disciplines.

HCM: The integrations may always be partial and temporary.

JY: Hmm, I think I would say he is a new media innovator...and not a designer.

HCM: He designed much of the GUI in the 1970s. He designed Smalltalk. He has designed various interactions systems for children, since then. It gets back to the range of the term "design."

JY: Yes exactly.

HCM: I teach at the Georgia Institute of Technology, and practically every engineer and researcher on this campus thinks of himself or herself as a designer. The term is not limited to visual expression.

JY: Which is also why I think designers are having problems reappropriating their design knowledge from print into digital specifically in the discipline of typography. Generally, I think that designers still view and judge typography in the context of print-derived rules. Would you agree?

HCM: Perhaps. The challenge is to reinterpret those rules for this new medium.

JY: And what possible models should designers refer to, to help them along...

HCM: Well, perhaps there are two issues. One concerns the technical limitations of the screen (even the best-quality screens today). But I think designers are used to working with and through such limitations in various print media as well. The greater challenge, perhaps, comes from the dynamic and interactive nature of the digital medium. We need a typography that is not just effective at rest, but also works dynamically. My colleague Diane Gromala is working for example on what she calls "biomorphic typography". This font actually changes in response to the writer's or reader's pulse, respiration, and other bodily indicators.

Interactivity

JY: In a response to an open question in my questionnaire, regarding key issues for the development of the framework, a prominent media artist and writer mentioned that 'interactivity ...is the key difference between the media of print and screen... and understanding how it would be the first thing a designer should understand before understanding how graphic design and typography works.' Would you agree with this?

HCM: I agree. Except I would say that it is also the last thing that the designer will understand. In other words, we need to explore what interactivity means for typography. We don't yet know. At least, I don't know.

JY: But acknowledging this issue would be a good starting point.

HCM: Absolutely.

JY: Speaking of interactive type, there have been some guys trying to do something with it. The pioneers in this field would be Letterror, www.letterror.com.

HCM: I'm sure there are experiments that I don't know of. I think we are in an early experimental phase.

JY: Though I still struggle to see the greater relevance in the mainstream. Letterror is a strong advocate of designers and typographers taking control of their own programming destinies by encouraging them to write their own program. The majority of their typefaces are 'intelligent' and responds to user input that alters the form of the typeface. While this may be one method to free designers from the constraint of the technology, what other ways or perhaps disciplines should designers look to for future development of screen-based typography?

HCM: Well, I think new media designers in general should learn as much as possible about earlier "new media" -- such as photography, television, film. In the case of film and television, there were interesting issues of typography for those media. Looking back at the issue of typographic expression in television and film might provide inspiration for thinking about the digital medium.

[D] Typographic Framework Development and Approach

Reappropriation of existing typographic knowledge

JY: In Lev Manovich's book The Language of New Media, he stresses the connections and continuities of old into new media. Specifically, he has used the art of the cinema to highlight this point. While in your book with Richard Gruisin, Remediation, you argue that visual media achieve their cultural significance precisely by paying homage to, rivalling, and refashioning (remediating) such earlier media as perspective painting, photography, film and television.

HCM: Yes. I think Manovich has done a great service by making this argument in such a thorough way.

JY: Typography for screen is essentially going through the same process of appropriating the print-derived knowledge into a usable format for screen. Is this appropriation benefiting or hindering the development of screen-based typography?

HCM: We argue that appropriation is an essential part of design. Appropriation and refashioning are activities that all designers engage in, in all new media. So it is with screen-based typography. Indeed how else could it be? Where would we get the notion of representing text on the screen without borrowing it from print?

JY: At what point does appropriation end and new knowledge created from within the discipline start?

HCM: Appropriation never ends AND new knowledge is always being created at the same time. Even the earliest screen-based typography, such as Susan Kare's work at Apple, was both remediating and highly innovative. I think that it always the case with the development of any media form -- digital or otherwise. It is always an eclectic mixture of new ideas and traditional forms.

JY: One of the main enquiries of the questionnaire was to investigate if the new typographic framework should be medium dependent or not. While there is general consensus that print and

screen-based media are different, the designers' approach to typography should not be any different because type is used to communicate a textual message. However, there is an opposing view, which believes that the need to understand and cater for the characteristics of screen-based media should be foremost in the consideration of the framework. I know these 2 views are not mutually exclusive but what are your views on this issue?

HCM: Because typography on the screen will always be borrowing and refashioning print typography and at the same time it will be adapting itself to the conditions of the screen. The framework must recognize both aspects of design practice. So I don't see what is gained by trying to eliminate one or the other.

JY: Ok. So it's a balance between the two.

HCM: Yes.

JY: We have already talked about characteristics of new media, which have been in existence in established disciplines such as the fine arts, filmmaking and literature.

HCM: Yes.

JY: And we both agree that these influences are beneficial to the development of new media content?

HCM: Yes. I would go a little further. Such influences are unavoidable. We haven't got the choice because these other media forms are already current in our culture. We have to take them into account in the design of new media.

JY: So I take it that we can extend this viewpoint to the development of my proposed typographic framework?

HCM: Yes. I think that one should acknowledge this process of remediation from the outset.

JY: If so, which discipline (apart from print) will be influential in the design and development of screen-based typography?

HCM: Then you can consciously explore the relationships of the old and the new in digital typography. As I suggested, among older media it is particularly time-based media (TV and film)

that may be important to digital typography. Also consider evolving new media forms that are highly interactive, such a computer games.

[E] Framework Ingredients

Hypertext

JY: How about hypertext fictions? In terms on it's non-linear narrative?

HCM: What does the computer game have to teach us about digital typography? Yes. Hypertext too.

JY: Computer games - how to engage an audience and to increase participation. If the user feels that they are engage with type, be it text and the content or for its' visual, expressive quality, then I think it will be useful.

HCM: I agree. Computer games are one of the most compelling and successful fields of interface design today.

JY: Yes, I agree, though I myself am not such a big gamer.

HCM: Joyce, I'm afraid I need to sign off soon.

JY: Ok, a few last questions.

HCM: Ok.

JY: The context in which Hypertext is taken is based primarily on the www model. However, I am aware that there are a number of successful Hypertext systems such as Intermedia, Storyspace and Microcosm. To your knowledge, in the development of these non-networked systems, was the issue of typography considered?

HCM: No. I don't think so. Certainly not in Storyspace, which I designed with Michael Joyce. Most of the early hypertext people were humanists who did not (yet) understand the importance of visual presentation.

JY: Do you think it will change?

HCM: The lack of visual flexibility is one reason that these systems were superseded.

JY: And lastly, what would be typography's future role in the digital medium?

HCM: I think that typography will continue to play a vigorous and important role in digital communication. But it will have to share its status with other forms of (visual and interactive) expression. Just as the status of the printed word has changed in the digital age, so the status of typographic representation will and must change.

JY: Will it still remain as the primary tool of communication though?

HCM: I think it is unwise to try to predict the technological future (more than a few years in advance). But I can't imagine that language, as a communications medium will diminish. The question is: what will be the balance between oral forms (digitized audio) and verbal forms (typography). I don't think we can know that.

JY: Ok. Thanks for your insight. If you don't mind, I might need to contact you at a later date for your comments on a draft report of the interviews.

HCM: It was a pleasure to chat with you.

[End]

APPENDIX 6

6.1 A Typographic Dilemma: Reconciling the old with the new using a new cross-disciplinary typographic framework

Paper presented at the 2nd International Conference on Typography and Visual Communications: Communications and New Technologies held in Thessaloniki, Greece, July 2004

A Typographic Dilemma: Reconciling the old with the new using a new cross-disciplinary typographic framework

Abstract

Current theory and vocabulary used to describe typographic practice and scholarship are based on a historically print-derived framework. As yet, no new paradigm has emerged to address the divergent path that screen-based typography is taking from its traditional print medium. Screen-based typography is becoming as common and widely used as its print counterpart. It is now timely to re-evaluate current typographic references and practices under these environments, which introduces a new visual language and form.

This paper will attempt to present an alternate typographic framework to address these growing changes by appropriating concepts and knowledge from different disciplines. This alternate typographic framework has been informed through a study conducted as part of a research Doctorate in the School of Design at Northumbria University, UK. This paper posits that the current typographic framework derived from the print medium is no longer sufficient to address the growing differences between the print and screen media. In its place, an alternate cross-disciplinary typographic framework should be adopted for the successful integration and application of typography in screen-based interactive media. The development of this framework will focus mainly on three key characteristics of screen-based interactive media – hypertext, interactivity and time-based motion – and will draw influences from disciplines such as film, computer gaming, interactive digital arts and hypertext fictions.

1. What is the Dilemma?

This paper describes the theoretical background and review conducted as part of a PhD research study currently undertaken by the author. The primary aim of this research enquiry is to investigate the relevance of current typographic knowledge for screen-based medium and to devise an alternate framework to address the critical issues arising from the application of typography in this medium. This paper will focus on the theoretical review carried out so far and a description of the proposed new conceptual framework.

The designer and typographer Stanley Morrison in 1928 defined typography as having a 'specific purpose; of so arranging letters, distributing the space and controlling the type as to aid to the maximum the readers' comprehension of the text' (1951, p.4). While this principle still holds true for screen-based type, its application is compromised through technical constraints of current type display technology. The problem of legibility is as relevant for print as it is for screen, however the strategy and approach in application is very different between the two. Print's answer is for absolute control, while screen's solution is for flexibility and compromise. This example illustrates one of the many current difficulties faced by designers practising in a discipline (new media), which has only begun to develop its own critical theory and language. Many current examples of 'good practices' for print are in direct conflict with what can be considered to be 'good practices' for screen. Similarly, our ideas about the print medium are also in direct contrast to our ideas about the screen-based medium. Text on print is fixed, authoritative and tactile. Text on screen is transient, multi-voice and virtual. A strategy is needed to resolve this conflict between appropriating old knowledge into a new medium.

1.1 Old Knowledge + New Media = Dilemma

Whenever a new and significant visual technology is introduced to society, there is bound to be a process of 'remediation' (Bolter and Grusin, 1999) where all new media borrows and appropriates from previous media in order to make sense of it. Bolter and Gruisin argue that new technology does not really imitate reality but rather another medium. In fact, they state that 'this is all new technology could do, i.e. define itself in relationship with earlier technologies of representation' (2001, p.28). Photography strove to provide a more realistic representation of reality compared to paintings. In turn, digital images strove to achieve photo-realism, as real as actual photographs. Film was influenced and compared initially to the theatre experience. It started to develop its own visual language by first appropriating the techniques from the tradition of theatre (for example, filming from a fixed distance, to mimic the view of a theatre viewer) to the development of montage and editing techniques developed specifically for the film media.

Media theorist Steven Holtzman (1997) takes a different view from Bolter and Gruisin, by suggesting that repurposing is a transitional step which paves the way for the development of new roles and techniques. In his view, 'repurposing is a transitional step that allows us to get a secure footing on unfamiliar terrain' (1997, p.15). Unlike Bolter and Gruisin who argue that the process of remediation continues throughout the development of the media, Holtzman sees the repurposing phase ending when new media is able to exploit its own unique qualities.

Generally, the balance between appropriation and creation will shift as new media matures. The shift in balance is a gradual and evolutionary step. The development of screen-based media is no different. However, unlike visual culture where imagery has been commonly applied across many different media (such as painting, photography and film), typography as a textual form has (up till 15 years ago) always been represented in a print-based environment. Even now, the written culture is still considered synonymous with the medium of print. This attachment and reliance on print medium and its technology, is what I believe to be the major stumbling block to the understanding and application of typography in a screen-based interactive medium.

1.2 What is Wrong With the Current Framework?

Our current framework is entirely dependent upon a print-derived framework and is inadequate to cope with the radical changes that have been bought about by the digital medium. There is no denying that the nature of type professionals was very much linked to the technological advances of the printing industry. For over four hundred years after the invention of the movable printing press, type design and type composing were handled by punch-cutters and compositors respectively. However, technological advances – such as the automatic punch-cutting machine and machine-set text, spurred a shift to typeface and layout design delivered by a specialised group of professionals who we now call the modern typographers.

This reliance on print technology and medium extends to the development of knowledge surrounding the discipline. Existing terminology still reflects typography's print origin. Terms used to describe the anatomy of a typeface (x-height, counter, baseline, descender, ascender), type composition (kerning, leading, tracking) and the measurement units (em, en, pica, points) have been derived from printing and punch cutting activity. Not only do we still use print-derived terms, we tend to think, write and read using a print model (Chartier, 1995). The transition from print to screen involves much more than taking our print model and adapting it for the screen. It requires a complete review of how we approach, view and apply typography.

2. Proposals to Reconcile the Differences

2.1 A new conceptual framework

The development of this framework can be broken down to two main stages or in this case, two fundamental questions. Firstly, how relevant is current print-derived knowledge for screen-based media? If so, what are they? Secondly, what characteristics of screen-based media will have a significant effect and influence towards a new approach to screen-based typography? The next two sections will attempt to provide some answers to these questions.

2.2 How relevant is current print-derived knowledge for screen-based media?

Based on a questionnaire sent out to design practitioners and educators, it was clear that many of the fundamental principles, knowledge, traditions and skills are still considered to be essential and relevant for the screen-based medium. Unsurprisingly, the issues of legibility and readability still remain one of the most fundamental factors for designers when learning and applying type in any medium. The role of type remains the main tool of communication, despite the rise of other visual and aural media employed to communicate a message. There was a general acknowledgement and awareness that screen-based media brings with it its own nature, characteristics, freedom and constraints. Keeping this in mind, it is crucial for the framework to integrate new knowledge (appropriated from other disciplines) with fundamental principles of type. The challenge of this approach is to balance the emphasis between subject knowledge with medium specific knowledge.

2.3 Influences of external disciplines

Historically, the craft of typography was a closely guarded affair. Both Kinross (1992) and Jury (2003) have commented on how printers and later typographers practiced their 'black art' in secret. It was as Jury said, 'an activity founded on impiricalism [sic] and, to the outsider, shrouded in secrecy' (Jury, 2003, p.6). While typographers were focused on practising and perfecting their art to an accepted standard, it was left to artist, poets and other non-typographers to experiment with the subject. Examples of early typographic experimentation came from poets such as Guillaume Apollinaire (1880-1918) and Stephan Mallarme (1842-98), artists such as Filippo Tommaso Marinetti (1876-1944) and composers such as John Cage (1912-1992). Much early typographic experimentations were influenced by artistic and literary movements of the 20th century: Futurism, Constructivism, Dadaism and Modernism. Hence, typography is no stranger to the influences of external disciplines. According to Teal Triggs, experimental typography developed in the 1990s 'borrowed heavily from Postmodernist theory, developing

many characteristics from varied approaches: fragmentation, hybridity, parody, pastiche, wit and play' (2003, p.15).

In the past few years, there have been a growing number of designers and typographers advocating a more cross-disciplinary approach towards the subject of typography in light of new media developments. David Jury insightfully pointed out that 'the study of typography cannot (and more and more is not) confined to any one special branch of learning' (Jury, 2003, p.152). While the work of designer / typographer / performance artist, Elliot Peter Earls have challenged the traditional purpose and aesthetic of type by using it with other kinds of media such as music, performance art, digital video and spoken word poetry in his work[1]. New concepts brought about with the introduction of New Media concepts such as 'digitality, interactivity, hypertext, dispersal, virtuality and cyberspace' (Lister et al., 2003) now require the discipline of typography to question its own principles and embrace new ideas from external disciplines.

2.4 Synthesising the old with the new

Identifying these strategies must first begin with a critical examination of diverse and growing realm of issues in new media. This is not an easy task, as the discipline is itself still developing its own critical discourse and historical genealogy. However, key texts have begun to emerge in the field of new media critical discourse from authors such as Lev Manovich (2001), Martin Lister (2003), Noah Wardruip-Fruin and Nick Montfort (2003). In their introduction to their book, *A Critical Introduction to New Media*, Martin Lister and his co-authors acknowledge that the 'field is so complex that it cannot be addressed other than by combining, or synthesising, knowledges' from 'visual culture, media and cultural history, media theory, media production, philosophy, the history of sciences, political economy and sociology' (2003, p.1). Unsurprisingly, the discipline of new media has become a large and complex field of study. It would be unrealistic in this paper to try to represent and capture all the changes brought about with the introduction of new media. Instead, my first task is to understand how these changes have impacted on the discipline of typography and how it challenges our current understanding and application of typography in new media. Similarly, rather than focussing specifically on issues that have arisen from the discussion about the technological impact on typography, I sought to draw theories, concepts and strategies specifically from external but relevant disciplines such as film, media, communication and literary studies to shed light on the application of typography in interactive screen-based media.

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[1] His latest project is a film on DVD-ROM entitled Catfish, released by Émigré Fonts. The film is described as a fusion of Earls's ventures into varied disciplines including graphic design, music, poetry, criticism, performance art, writing, type design and more.

Pursuing new knowledge in other discipline does not imply that existing knowledge will be discarded. Fundamental knowledge and principles are the backbone to the proposed framework. It gives the framework a historical and theoretical foundation on which new medium specific knowledge is built upon. To use an analogy, before the process of restoring a five hundred year-old house could begin, the architect must first decide how much of the existing house is still suitable for current housing and environmental needs. Revisiting and challenging existing principles is the first step towards building this new framework.

3. Beginnings of a Framework

The framework presented in this paper is still in its formative stage. The final definitive version will be presented as a conceptual framework aimed at:

- Developing a set of modules for the delivery of the subject of typography within a new media design curriculum.
- Developing strategies for design educators to integrate typographic principles with new media attributes.
- Forming recommendations to guide the development of a parallel, practice-based framework.

3.1 Core principles

One of the framework's main attributes is the separation between non-medium dependent principles with medium specific knowledge. This relationship is illustrated in Figure 6.1.

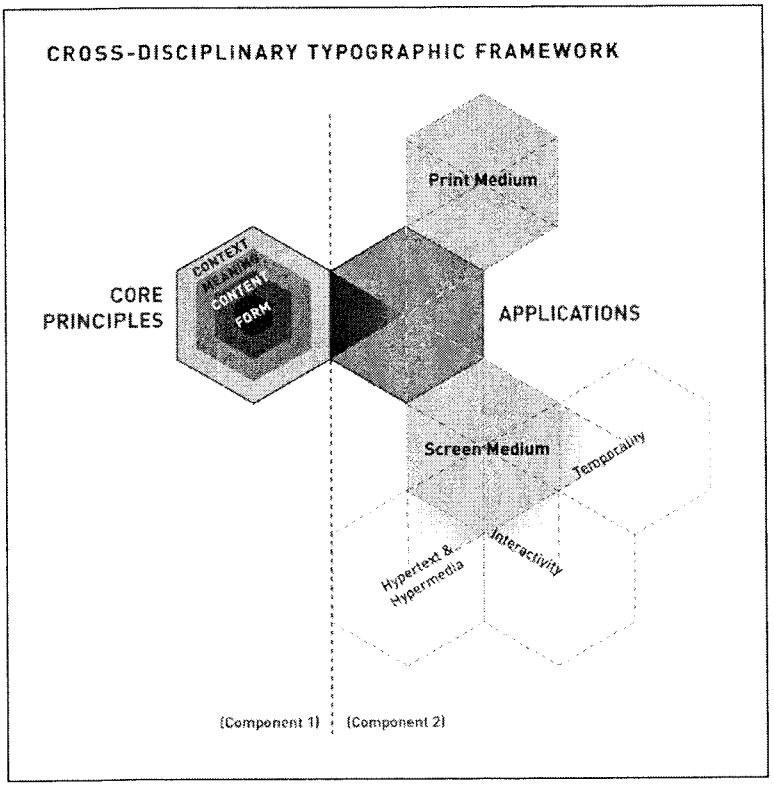


Figure 6.1. Cross-disciplinary Typographic Framework Model

The component consists of a set of core-principles (including theories, terms and applications), which are global in their applicability. The second component consists of a set of medium-specific principles developed for new media. The strategy employed in this study, to determine how existing print-derived principles are identified, investigated and selected, is based upon four different sets of discussions and applications of typography. In this way, each part highlights different sets of critical issues and roles typography plays in relation to the delivery of a message.

These four parts are:

Typographic Form

This classification refers to the kind of typographic usage, which explores the usage of the letterform as a physical and abstract form, independent on its semantic meaning.

Typographic Content

This classification refers to the kind of typographic usage, which explores the physical and metaphorical construction of letterforms and typographic layout with the transmitting medium.

Typographic Meaning

This classification refers to the kind of typographic usage, which explores the way meaning is communicated and understood through the examination of the semantic relationship between type and language.

Typographic Context

This classification refers to the kind of typographic usage, which explores the shifting relationship between text, audience and medium.

In each section, general themes, historical precedents and current issues are listed and questioned on the level of 'medium dependency'. This term is used to indicate, if an issue is significantly influenced, caused or as a result of a specific medium, it will be excluded from Component One in the framework and instead moved to Component Two.

3.2 A strategy of questioning

The strategy used in this study, to investigate the relevance of existing principles, is based on a simple, systematic posing of critical questions. These key questions generally fall within three themes. Listed below are tentative examples of some possible questions in each theme. I have chosen to concentrate on the term 'practice' as I believe that the discipline of typography emerged from the actual 'doing' process of setting and laying out type in a specific medium. Terminology and principles arising from this discipline are a result of an accumulation and reflection of practical knowledge in the engagement of practice.

1. Historical context

1. Where did this practice originate?
2. How was this practice used originally?
3. Has that changed from current usage? If so, what are the factors involved that has brought about this change?
4. Did this practice originate from a printing technique?
5. Is there any equivalent practice in other media today?
6. Is there any equivalent practice in other disciplines?

2. Application & Design

1. In which area is this practice most commonly used?
2. Has that changed due to technological, social or political factors? If so, how has this practice changed?
3. What are the issues associated with this practice?

4. Which media is this practice most associated with? Why is this so?
5. Are the terms commonly used in this practice medium specific?

3. Technology

1. Has the shape and form of this practice been changed due to the changes in technology?
2. Has technology played a part in the creation and development of this practice?
3. Is so, which part and how?

4. Introducing Cross-Disciplinary Themes

This study has identified three new media characteristics, which will have an increasing influence in the application of screen-based typography. They are discussed in more detail in the sections below.

4.1 Hypertext and hypermedia

4.1.1 A Model of the mind

The vision of associative links was first elaborated by Vannevar Bush in his article "As we may think" first published in the Atlantic Monthly, July 1945. He was the Director in the Office of Scientific Research and Development (US) during World War Two. He was motivated by the problem of information overload and its subsequent retrieval. As a result, he envisioned the Memex, a machine where data could be stored and retrieved by association rather than by alphabetical or numerical system of indexes. Bush was first to advocate the idea that associative linkage is a more natural model of information management as it closely resembles the way our own mind works (Lister et al., 2003), (Wardrip-Fruin and Montfort, 2003). This idea of associative links has greatly influenced the development of the now familiar terms and concepts, which are Hypertext and Hypermedia.

The term Hypertext was actually coined by a computer scientist, Theodor Nelson in the 1960s, and he refers to it as, '...non-sequential writing – text that branches and allows choices to the reader, best read at an interactive screen' (quoted in Landow, 1992, p.4). Landow proceeds to explain that the term Hypermedia extends the notion of links within text to visual information, sound, animation and other media elements. According to Lister et al (2003), the history of Hypertext is tied to a dual history of literary and representational theory and the computer development industry. This parallel development has influenced the way hypertext is used and is thought of. The idea of multiplicity and non-linearity of text has been in existence prior to the invention of the digital media. These 'ergodic' literature as Aspen Aarseth describes it (1997),

were often atypical works in the history of literature which according to Lister et al (Lister et al.) sought to challenge the linearity of text. These diverse works range from literature classics such as the I Ching, stories by Jorge Louis Borges (1964), Italo Calvino (1981), George Perec (1987), poems by Guiliamme Appolinaire (1980), William Burroughs (1978), Raymond Queneau (1983) to popular children's fiction such as the Choose Your Own Adventure series. Academics have long been using the idea of externally linked text as footnotes to provide a second or a third thread of narrative in their arguments.

The second strand of theories and usage of hypertext comes from the theories of text proposed by Barthes, Foucault and Derrida. These theories are used to understand hypertext through the ideas of fragmentation, non-linearity and reader author relationship (Lister et al., 2003). This second characteristic of hypertext has moved beyond Bush and Nelson's notion of hypertext as merely being an aid to information retrieval through associative links. There is a triangular relationship between the reader, text and author in textual documents. For print documents, the balance of power lies very much with the author. While in hypertext documents, the balance of power has shifted to the reader, in that he/she has the additional opportunity to change or challenge the flow of narrative set out by the author. This does not imply that the reader is powerless to question or even physically change the way he/she reads a printed text, however it will require a much more conscious intervention by the reader.

4.1.2 Hypertext and typography

Designers of a printed document tended to think of narrative in terms of physical structure, page after page, top to bottom. With hypertext, the physical placement of a text is replaced by multiple entries and exits as a series of points in a virtual space. Instead of a single arrival and exit point, the designer is faced with deciding how to synthesise the semantical and aesthetical relationship between different units of text in separate locations.

Re-presenting an existing text in a hypertext environment might even revert the text back into a form closer to its original, conversational and multi-strand quality. Bolter (2001) cites the example of texts by Aristotle, which were put together by Aristotle himself or by other ancient editors. In a printed version, all these texts would be put together in a linear, chronological manner. However, if constructed in a hypertext environment, the text could be arranged according to various thematic and chronological orders that might better fit the way the text was constructed.

4.2 Interactivity

4.2.1 A Definition

Interactivity has become a term which has becomes increasingly used to describe new media and as such needs to be defined in clearer terms if it is to be of any use. According to Lister et al (2003), ideas and definitions of interactivity operate at two levels: one ideological and the other instrumental. At the ideological level, interactivity is one of the main differences between 'old' media, which offers passive consumption. This idea treats the users as consumers and uses this concept as a key selling point of new media, where it is seen to give more personal choices and experiences to consumers.

I am however; more concerned with the second level, where interactivity is used and seen as a functional element of new media. Many authors have tried to define this concept and I have chosen to use the one closest to how I view the concept of interactivity. Lister et all defined it as:

> Being interactive signifies the users' (the individual members of the new media 'audience') ability to directly intervene in and change the images and text that they access. (2003, p.20)

Interactivity in this sense allows users to participate in the viewing and reading of the media in order to produce meaning. It becomes a physically and mentally bi-directional communication conduit. Within this functional definition, there are three levels of interactivity.

4.2.2 First level of interactivity

At this level, the physical structure and hierarchy of the content remains unchanged. However, physical and cognitive interaction occurs when a user decides about the content and sequence of how it is viewed. Lev Manovich describes this as 'closed interactivity' (2001, p.53). A common example of this kind of interactivity is hypertextual navigation (Lister et al., 2003), where a user selects from a fixed collection of information, text, images, and sound to construct an individualized page or sequence of pages through the navigation process.

4.2.3 Second level of interactivity

At this level, the hierarchy of the content changes and adapts to the user's behaviour and selections. Manovich (2001) describes this as 'open interactivity', which refers to situations where the user plays an active role in determining the order in which the generated elements are accessed, and the system has the capability to modify or generate new objects or responses for the user. This level of interactivity can also be described as an immersive experience when encountered in 3D spaces like 'Tomb Raider' or 'Doom'. The user and system respond continuously to each other's actions in a continuous feedback loop. In a more traditional

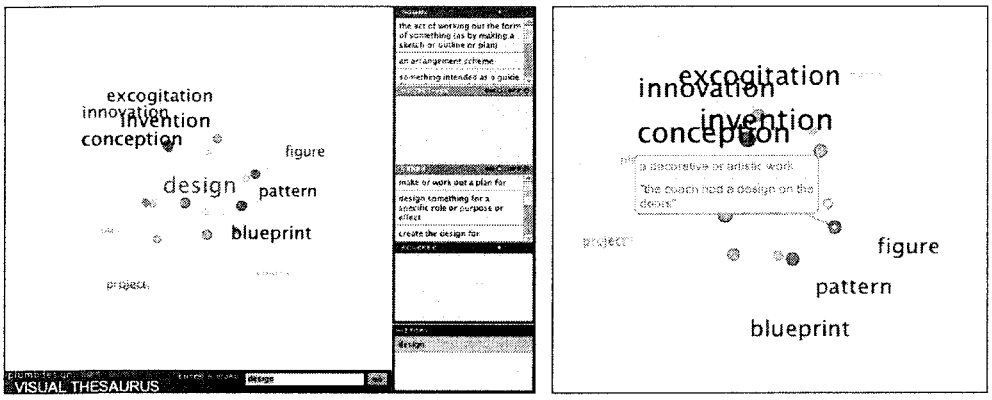
hypertextual environment, web sites like Amazon remembers a user's past purchases and viewings in order to create a more personalised merchandise selection for the user.

4.2.4 Third level of interactivity

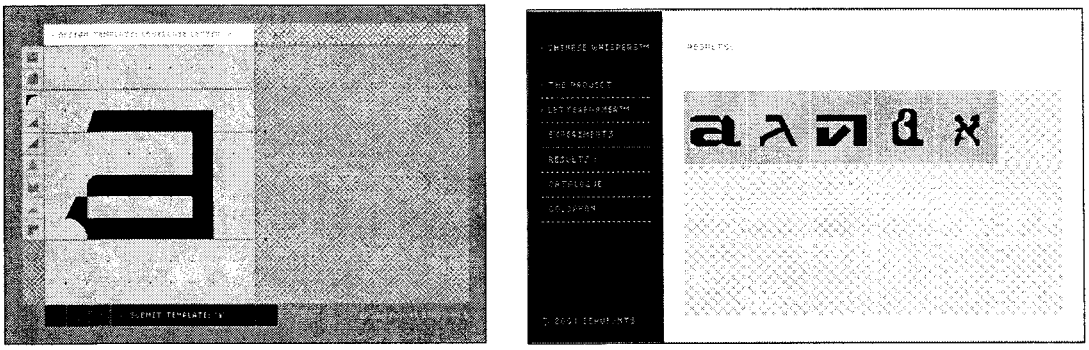
This third level of interactivity is found in an open and live system where there is continuous engagement between a producer, a user and the message. There are two kinds of system described here, one is a system that will respond in an understandable manner towards the user; by changing the way it operates and executes commands. One common example of this kind of interaction is found in the field of artificial intelligence. The other is a system, which facilitates direct communication between one to one and one to multiple users, for example in web logs, Multi-User Domains (MUD), and multi-user chat environments.

4.2.5 Interactivity and typography

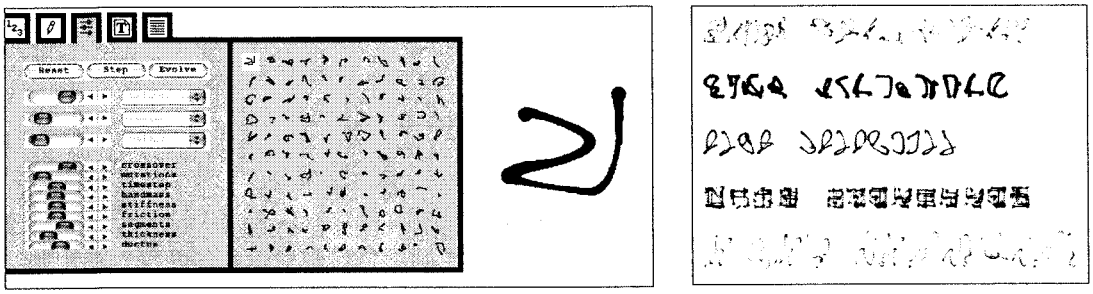
Current examples of work combining different levels of interactivity with typographic elements can be divided into several groups. The first group deals with what Shedroff (1994) describes as 'intervention and control'. For example, in the Visual Thesaurus (www.visualthesaurus.com) web site (refer to Figures 6.2 and 6.3), the user is given many different ways in which to control the types of information shown. He/she can select to view different linguistic relationships between words for example, synonyms and antonyms. The second and most common group deals with Shedroff's core idea of 'productivity and creativity'. Projects that fall into these groups provide the opportunity for users to create, build and alter content in their sites. Some typographic examples (illustrated in Figures 6.4-6.7) include the Beaufont's Chinese Whisper (www.beaufonts.com/pssst/) (2001) and the Alphabet Synthesis Machine (2002) projects.



Figures 6.2 & 6.3. Screen Shots of the Visual Thesaurus Application



Figures 6.4 & 6.5. Screen Shots of Beaufont's Chinese Whisper Project
Five original lowercase 'a's were created by a set of international designers using the LetterformerTM software. These were then posted on the website where other people could use them as a basis to create the next letters in the alphabet.



Figures 6.6 & 6.7. Screen Shots of the Alphabet Synthesis Machine
Figure 6.6 illustrates the variety of parameters, which a user can change in order to evolve the alphabet. Figure 6.7 shows some of the archived alphabets generated by this machine.

The examples given in the previous paragraph illustrate the more functional aspect of incorporating interactivity with elements of typography. However, designers must not ignore an important theoretical understanding of interactivity, in which authorship is being transferred from the traditional producer to the reader/user. This transference of authorial power has questioned the definition of text, and in this case, interactive text. The traditional reading and creation of meaning from a text makes assumptions about its stability but also the fluidity of its interpretation. However, within an interactive environment, the stability of text has also become fluid. Designers must be wary of the level of control and feedback given to users in order to deliver a coherent textual experience. At the same time, designers must also accept that the level of typographical control is no longer possible and learn to design for multiple user experiences that remain close to the original intent of the message.

4.3 Temporality

4.3.1 A definition

The term 'temporality' is defined as the passage of time represented in a virtual space. In relation to new media, it describes the passing of time or a representation of live events viewed from a static screen (Manovich, 2001). In this section, I will discuss two areas in which temporality is commonly found.

4.3.2 Narrative delivery

Temporality is used as a technique to deliver a story (or construct one through the playing of a game) through different narrative structures to an audience or player. It is most commonly found in television, film, animation and role-playing games such as Doom or Tomb Raider. In non-interactive media such as television, film and animation, the delivery of a narrative is the final objective of the producer. However in role-playing games, the delivery of a narrative is used as a strategy to facilitate what Janet H. Murray (1997) calls the 'active creation of belief'. In this way, the player continuously contributes to the narrative as he/she plays the game.

4.3.3 Communication facilitator

Temporality as a condition that facilitates the communication with one to one or one to many users. It can be found in online instant messaging engines, MUDs (Multi-User Domains) environments, online chat engines and SMS (Short Messaging System). These exchanges are synchronous, ephemeral and interactive. This kind of communication is more akin to face-to-face conversation than formal non-digital written communication.

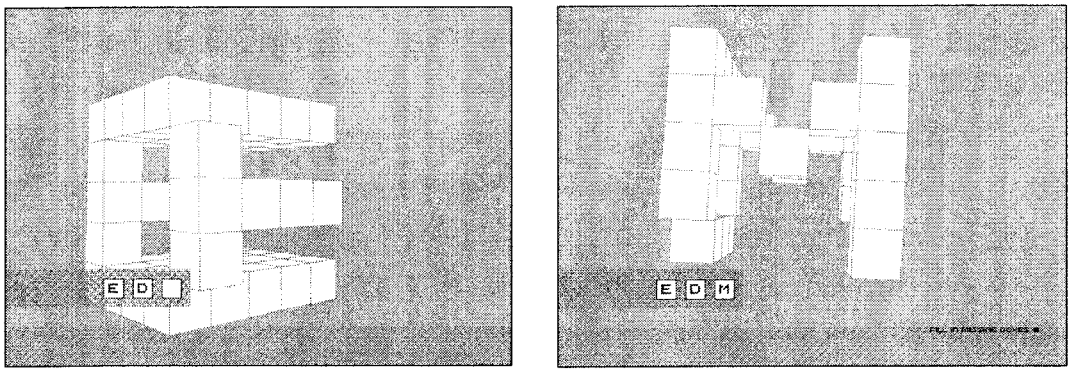
4.3.4 Temporality and typography

The act of writing on cave walls, clay tablet, parchments and books are our attempts to capture time and to preserve our stories in a permanent state. Prior to writing, attempts to deliver stories and information to others have been orally based. Poets and writers narrated their stories from memory and it would be passed on from generation to generation using oral means. The inevitable decline of these stories meant that another form of communication was needed to preserve the knowledge gained in previous generations. When the switch from oral to the written occurred, the way in which we deliver and process textual information also changed.

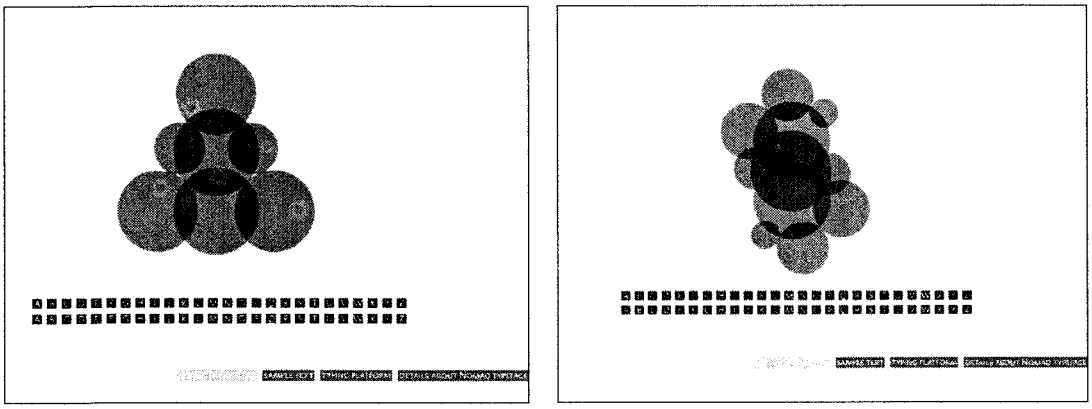
The written word achieved a status of authority and fixity. Readers expect text to be static and delivered in a linear fashion (although authors like Joyce and Borges have challenged this). Temporality in printed material was largely controlled by the reader. The author and designer are limited to what they can achieve structurally and semantically to control the pace of delivery. In contrast, early time-based media such as television, film and animation, the pace and narrative

delivery depends largely on the producer. However, with the introduction of the interactive digital environment, the viewer becomes much more active in the viewing and creation of meaning. Users are free to intervene and contribute to the narrative during the delivery of a narrative in role-playing games or in interactive television such as Liquid Stage, which was built as a prototype to explore the possibility of enhanced television (Meadows, 2003).

The delivery of text in a purely time-based environment was first used by pioneers of motion filmmaker such as George Melies and D.W Griffith in the early 1900s. It consisted of two-dimensional cards handwritten with dialogues, announcements, news and credits (Bellantoni and Woolman, 1999). By the 1950s and 60s, the technique of animating letterforms in title credits were used extensively by pioneering designers such as Saul Bass and Pablo Ferro.
The experience of time-based is ephemeral, kinetic, four-dimensional and transient. In this environment it is crucial for designers to create a strong visual impression and transmit emotional attachment to the message. Letterforms are now expected to perform both verbal and visual function, employing techniques normally found in film and animation media.
In an interactive time-based environment the development of these features are enhanced and distorted at the same time. This is because the additional factor of user intervention on the path of the message from the producer to the viewer is moved 'beyond the representation of reality into the seamless manipulation of reality' (Bellantoni and Woolman, 1999). For example in both the Intersection (www.thesystemis.com/intersection) (2001) and Nomad Typeface (Choi, 2001) projects, the user has the choice of leaving the display running as an animation or to intervene in order select different combinations of letters to be displayed.



Figures 6.8 & 6.9. Screen Shots of the Intersection Application
This project is an exploration of how letterforms intersect when projected along the x, y and z-axis in a three-dimensional space. If the user chooses not to intervene, the object will continue to animate in a random manner. In Figure 6.8, the letters 'E' and 'D' are projected along the x and y-axis. While in Figure 6.9, the letter 'M' has been added to project on the z-axis.



Figures 6.10 & 6.11. Screen Shots of the Nomad Typeface

Each character in the Nomad Typeface is animated and has its own individual movements. The character shapes are derived from multiple overlapping cells. Figures 6.10 and 6.11 show the letters 'A' and 'S'.

5.0 Discussion and Conclusion

This framework is still very much a work in progress. The result of this theoretical review (described in this paper) sets the context for the next stage of action research educational projects. A pilot study was carried out using an educational model of this framework with second year multimedia design students at Northumbria University. These students were asked to design a series of book covers and to create complementary interactive type promotional pieces. The study was underpinned by a combination of knowledge and project-based learning, rather than a purely project-based learning. Students' responded positively to this approach and rated an increase in their overall typographic knowledge and awareness at the end of the project. Key areas where students struggled were the translation of concepts across print and screen, and the application of basic typographic principles. The first problem might indicate that the students are more focus on the aesthetic and technical characteristics of the medium rather than the communication aspects of it. While the second problem might indicate that the students are lacking understanding in formal typographic knowledge. Further refinement of the framework will be tested through two more student projects, with graphic and multimedia design students respectively.

The new conceptual framework draws upon, in equal amount, between relevant current principles and new knowledge obtained from external disciplines. Research conducted so far indicates that this new knowledge should be derived from issues and ideas developed out of new media, specifically the themes of associative linking, interactivity and temporality. This paper advocates for a balance between the need to repurpose existing media with the need to create new

languages of expression. At the same time, it presents a strategy in which to question existing typographic principles from four different perspectives: form, content, meaning and context. This framework is offered here for critical reflection and as a basis for a debate on its applicability in the wider context of practice-based environment.

References

Aarseth, E. J. (1997) *Cybertext: Perspectives on ergodic literature.* Baltimore, Md.; London: Johns Hopkins University Press.

Apollinaire, G., Greet, A. H. & Lockerbie, S. I. (1980) *Calligrammes: Poems of peace and war (1913-1916).* Berkeley; London: University of California Press.

Beaufonts (2001) *Chinese whispers.* Available at: http://www.beaufonts.com/pssst (Accessed: 22 December 2003).

Bellantoni, J. & Woolman, M. (1999) *Type in motion: Innovations in digital graphics.* London: Thames and Hudson.

Bolter, J. D. (2001) *Writing space: Computers, hypertext and the remediation of print (2nd ed).* Mahwah, New Jersey: Lawrence Erlbaum Associates.

Bolter, J. D. & Grusin, R. (1999) *Remediation: Understanding new media.* Cambridge, Massachusetts: MIT Press.

Borges, J. L. (1964) *Labyrinths: Selected stories and other writings.* Harmondsworth: Penguin, 1980.

Burroughs, W. & Gysin, B. (1978) *The third man.* New York: Viking.

Calvino, I. (1981) *If on a winter's night a traveller.* London: Secker & Warburg.

Chartier, R. (1995) *Forms and meanings.* Pennsylvania, US: University of Pennsylvania Press.

Choi, B. (2001) *Nomad typeface.* Available at: http://www.typophile.com/cgibin/show.pl?29/381.html (Accessed: 9 March 2005).

Holtzman, S. R. (1997) *Digital mosaics: The aesthetics of cyberspace.* New York: Simon & Schuster.

Jury, D. (2003) *About face: Reviving the rules of typography.* Switzerland: RotoVision.

Kinross, R. (1992) *Modern typography: An essay in critical history.* London: Hypen Press.

Landow, G. P. (1992) *Hypertext: The convergence of contemporary critical theory and technology.* Baltimore, US: The John Hopkins University Press.

Levin, G., Feinberg, J. & Curtis, C. (2002) *Alphabet synthesis machine.* Available at: http://alphabet.tmema.org (Accessed: 9 March 2005).

Lieberman, Z. (2001) *Intersection.* Available at: http://www.thesystemis.com/intersection (Accessed: 9 March 2005).

Lister, M., Dovey, J., Giddings, S., Iain, G. & Kieran, K. (2003) *New media: A critical introduction.* London: Routledge.

Manovich, L. (2001) *The language of new media.* Massachusetts: Massachusetts Institute of Technology.

Meadows, M. S. (2003) *Pause & effect: The art of interactive narrative.* Indianapolis, Indiana: New Riders.

Morrison, S. (1951) *First principles of typography.* 2nd edn. Cambridge: Cambridge University Press.

Murray, J. H. (1997) *Hamlet on the holodeck: The future of narrative in cyberspace.* New York, NY: The Free Press.

Perec, G. (1987) *Life a users manual: Fictions.* London: Collins Harvill, 1987.

Queneau, R. (1983) *One hundred million poems.* Paris: Kickshaws.

Shedroff, N. (1994) *Recipe for a successful website.* Available at: http://www.nathan.com/thoughts/recipe/content.html (Accessed: 22 September 2003).

Thinkmap (1998) *Visual thesarus.* Available at: http://www.visualthesarus.com (Accessed: 9 March 2005).

Triggs, T. (2003) *The typographic experiment: Radical innovation in contemporary type.* London: Thames & Hudson.

Wardrip-Fruin, N. & Montfort, N. (eds.) (2003) *The new media reader* Cambridge, Mass.; London: MIT.

APPENDIX 7

7.1 Relearning Typography: Introducing a Cross-Disciplinary Typographic Framework

Paper presented at the Bi-annual Design Research Society Conference: Futureground, held in Melbourne, Australia, November 2004

Relearning Typography: Introducing a Cross-Disciplinary Typographic Framework

Abstract

Current theory and vocabulary used to describe typographic practice and scholarship are based on a historically print-derived framework. As yet, no new paradigm has emerged to address the divergent path that screen-based typography is taking from its traditional print medium. Screen-based typography is becoming as common and widely used as its print counterpart. It is now timely to re-evaluate current typographic references and practices under these environments, which introduces a new visual language and form.

This paper describes a study that utilises a combination of empirical methods and action research projects to form a new conceptual framework for the understanding and practice of screen-based typography. This study is part of a Doctoral programme in the School of Design at Northumbria University, UK. This paper focuses on the research carried out so far, the methodology used and the findings from two stages of the study. It will end by introducing a tentative cross-disciplinary typographic framework that has been developed to date.

This study starts by investigating the relevance of the current framework and evaluates the need for developing an alternate framework through a questionnaire survey. This is followed up by a series of interviews with practitioners working across different disciplines in an effort to identify new media attributes most influential towards the development of screen-based typography.

Results of the surveys have shown that understanding and identifying the future role of typography in screen-based media is key to the developmental strategy of this typographic framework. Typography continues to be one of designers' main tools of communication, regardless of medium. The introduction of the digital medium has not lessened the importance of this role and has in fact increased the reliance on typography to communicate in a clear and straightforward manner.

The influence of other disciplines in the development of new media content has also been strongly supported. Conclusions from this initial research points to the fact that the development of a framework must take into account several key factors. These include the impact of technology on the development and application of typography. The framework should also be responsive to the influences of other disciplines in the development of new media content. Influences from film, computer gaming, interactive digital art and hypertext disciplines must be

appropriated into the building of a new knowledge base for screen-based typography. Identifying and understanding the influences brought about by other disciplines should be a major consideration in the development of the framework.

1.0 The challenge of New Media on Typography

The expansion of the digital medium and its divergence into many forms of technical invention has truly transformed the way in which we live. In particular, the relevance of typography has been brought into question by the emergence of other forms of communication such as sound, animation and video. For a subject that is so grounded in the materiality of print, screen and time-based environments have 'introduced a new visual language, one which is no longer bound to traditional definitions of words and image and form and place' (Helfand, 1997, p.14). Typography's role as a communication form must be re-examined in light of the changes in how we read and view information via a screen-based environment.

2.0 Purpose of the Survey

In order to identify, understand and address these new challenges, a survey was designed and carried out as part of a PhD research programme. It was designed specifically to address two key research questions:

1. How relevant is current print-derived typographic knowledge for screen-based interactive medium?
2. What factors have affected the role of typography in screen-based interactive medium?

"Relevance" refers to the value of typographic knowledge derived specifically from the printing tradition. Is it worth learning and practicing or has it become redundant in this era of digital application and display? Instead of learning principles and rules derived from traditional methods of typesetting, would time be better-spent learning medium specific methods based on the characteristics of the new medium? While typography may still be considered the 'lingua franca' of graphic design (Heller, 2004), its role in multi-modal disciplines such as interactive design needs to be re-evaluated.

The survey was divided into two stages. The first stage consisted of an online questionnaire survey. It was primarily aimed at obtaining a clearer understanding of issues held by design practitioners and educators towards the relevance and role of typography in screen-based interactive media. The findings from the questionnaire provided a definitive indicator on how much of the researcher's hypothesis is verified by the sample.

The second stage of the survey consisted of a series of online interviews with subject experts in new media related disciplines. The aim of this stage was to determine which cross-disciplinary issues are the influencing factors towards the development of a new typographic framework.

3.0 Stage One: Questionnaire Survey

3.1 Delivery Method

Due to the geographical location of the targeted sample and the comparative lower level of cost, it was decided that the best way to administer the questionnaire was through the Internet. The questionnaire consisted of 25 questions, out of which 24 were closed questions.

3.2 Sampling Techniques and Criteria

The selection of the respondents was taken non-randomly. This method was preferred because it is based on a 'judgement sample'. According to Oppenheim (1992), a judgement sample relies on the researcher to try to obtain as wide a representation of individuals in their views and experiences. As well as this, a judgment sample involves the choice of subjects who are in a position to provide the information required because of their level of knowledge in this particular subject (Sekaran, 1992). The sample was divided into two major groups: educators and practitioners. The list was compiled by focusing on design and teaching excellence recognized through design journals, awards, annuals and professional organizations.

3.3 Respondents' Profiles

683 participants were contacted through email by the researcher and asked to fill in an online questionnaire. A total of 206 questionnaires were completed and returned to the researcher. This represents a return rate of 30.2%, which should not be perceived as low due to the 'cold-calling' nature of the email.

The survey asked respondents to rate what professional design activities they were involved in. If the respondents answered that they spent more than 50% of their time in a design practice, they would be classed as a practitioner. Table 7.1 shows the percentage of the respondent groups, while Table 7.2 shows the breakdown of the principal occupation of respondents. The 'others' occupations indicated in Table 7.2 consisted of Typographers, Web Developers, Design Writers and Design Researchers.

Respondent Groups	% of Respondents
Practitioners	62.0
Educators	23.4
Practitioner and Educators (equal)	6.3
Others	5.9
Unknown	2.4

Table 7.1. Breakdown of Practitioners and Educators

Principal Occupation	% of Respondents
Others	40.0
Graphic Designers (GD)	28.7
New Media Designers (NM)	26.8
Unknown	2.4
GD & NM (equal)	1.9

Table 7.2. Breakdown of Graphic Designers and New Media Designers

3.4 Data Analysis

Data was analysed based on three components of data analysis as described by Miles and Huberman (1994, p.10):

1. Data reduction
2. Data display
3. Conclusion drawing and validation

The researcher set up specific research questions and themes to code the collected data. The questions were grouped into four main themes:

1. **Relevance** of current typographic knowledge and skills in Print and New Media
2. **Role** and **function** of current and future typography (the way type is being applied)
3. **Influence** of the typographic element in Visual Communication
4. **Education model** for screen-based typography

3.5 Key Findings

3.5.1. Principles of typography are still crucial and relevant

There is a general acknowledgement and awareness that screen-based media brings with it its own nature, characteristics, constraints and freedom. However, most respondents view that print-derived knowledge, history, tradition and skills of typography are still crucial to the understanding and development of any type of typography.

3.5.2. Type remains the main tool of communication

There was not much support for type becoming a more visual or interactive element as first predicted. Designers are still inclined to regard typography as a mainly textual element used to communicate a message.

3.5.3. A typographic education model that is independent of its medium

The respondents were undecided if there should be a separate curriculum developed specifically for screen-based type. However, judging from their responses from other sections of the questionnaire, many would be in favour of a typographic education, which begins by teaching the fundamentals and history of type before moving on to the specific characteristics and limitations of different mediums.

3.5.4. There is no philosophical divide between the four main sample groups

There is no statistically significant difference in opinion between practitioners and educators; and between Graphic and New Media designers. Perhaps this is because a majority of design educators are still practitioners, who may also practice in both print and screen media. These two points may explain the more homogenous responses collected in this survey. It also provides an interesting insight into the relationship between practice and education in the visual communication field. It suggests a close relationship between the world of the design profession and design education; and dispels a common belief that the field of design education is disconnected to the changing nature of the design profession. It also echoes Richard Buchanan's (1998) view of a relationship more akin to a partnership, instead of practice leading education.

3.5.5. An 'extended' rather than an 'alternative' framework

There was wide support towards the development of an alternative framework for screen-based typography. The most common view was that it should be independent on the medium of transmission, focusing first on the fundamentals of typographic knowledge, skills and function. Subjects such as film, communication, information and usability studies should be considered important elements towards the development of new knowledge for screen-based media. Rather than an 'alternative' framework, perhaps it is better to address it as an 'extended' framework in which existing knowledge needs to be appropriated and adapted to the context of screen-based type application.

4.0 Stage Two: Subject Expert Interviews

The findings from the questionnaire survey seemed to indicate that current print-derived typographic knowledge is still relevant for screen-based interactive media. At the same time, the respondents' answers supported the study's initial hypothesis that the construction of an alternative framework needs medium specific knowledge gained through disciplines, which reflect the characteristic of screen-based interactive media. The subject expert interviews were used to draw out medium specific issues that has and will continue to have an impact on the way typography is viewed and applied in screen-based interactive medium.

4.1 Delivery Method

Nine semi-structured (Robson, 2002), one-to-one online interviews were conducted with selected participants. The main factors that determined the delivery method of the interviews were due to the geographical location of the participants, cost and time involved. These interviews were carried out using one of the three online communication methods: Instant Messaging, external chat website and synchronous email.

4.2 Interviewees' Profiles

Individuals were chosen based on their specialist knowledge and interest in areas relating to the practice and theory of screen-based interactive media. The breakdown of the number of respondents from each discipline is listed in Table 7.3 below:

Disciplines	No. of Respondents
Interaction Design	2
Design and Media Theory	2
Digital Type and Typography	3
Electronic Literary Theory	2
Interactive and Time-Based Art	0[1]

Table 7.3. Interviewees' Discipline Breakdown

4.3 Data Analysis

The data collected from the open-ended questions was analysed using the grounded theory method. Grounded theory 'is a qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon' (Strauss and Corbin, 1990, p.24). This method was chosen, as it allowed constant 'searching, comparing

[1] Despite repeated efforts, the researcher was unable to elicit any participation from this discipline. The failure to elicit any participation could be the result of many factors, including the lack of time or the lack of interest in the subject.

and interrogating the first few transcripts to establish categories that address the research questions' (Knight and Arksey, 1999, p.162).

4.4 Key Findings

Influencing factors on the role of screen-based typography

In trying to identify how the role of typography has change in screen-based media, it is perhaps appropriate to first identify factors that have affected this change. Investigating and understanding these factors will provide clues towards building a framework that reflects the changing boundaries of this discipline. These interviews revealed five main influencing factors:

1. Technology
2. Characteristics of the medium
3. Designer's evolving values
4. Reappropriation of old into new media
5. Balance between communication forms

4.4.1 Technology

A strong and recurring theme that emerged from the questionnaires and interviews suggests that the most prevalent factor dominating many issues regarding new media is, by and large, determined by technology. Typography it seems, is no exception:

> 'Typography has always been a technology problem. It's about using the widget of the year in such a way that the eye and brain find the end results useful to look at.'
> (Excerpt from the interview with a Digital Typographer)

It is inevitable that technology should be the main concern with regards to new media. However, one participant remains skeptical on the level of importance attached to technology:

> 'Technology has developed so rapidly even in the time I've been interested that certain details are already redundant. It is the opportunities offered that matter, not really the origin of those opportunities.' (Interactive Designer)

It remains to be seen at what stage this digital mode of communication becomes 'second nature' to current and future generations. Up until this time, the focus on exploration of available technology will still remain the main concern of designers. As such, when participants were asked about their main concerns linked to current web-based typography, unsurprisingly most referred to the technical limitations of the screen medium, specifically typographic visual quality and typeface restrictions.

4.4.2 Characteristics of the medium

Three characteristics were identified from the questionnaires and interviews as being most relevant to screen-based typography: interactivity, hyper-textual links and temporality. Participants were initially asked to consider the key difference between print and screen media is 'interactivity'. While most participants acknowledged it as a key element of new media, it is not considered to be the defining element. Other influential elements listed included time-based motion and multi-linking capability, which will be taken into consideration during the research.

4.4.3 Designers' evolving values

Precise control over typography is no longer viable and realistic in a screen-based environment. Instead designs must be flexible to allow for variation in typeface, font-size, alignment and length available in different browser software. New generations of designers and viewers are less likely to encounter 'negative transfer', which refers to interference of previous learning in the process of new learning. The framework needs to take this natural evolution into consideration and perhaps should be mindful of how it accommodates the next generation of designers and users. This is how one participant described this evolution:

> 'So, yes we all recycle the past whilst tomorrow's youth will create the future. We can but remind the new ones of critical areas of concern, which they will shun or embrace or edit at their will. Our job is to accept the inevitable and offer encouragement. We can continue to be a sounding board or springboard for the revolution.' (Interactive Designer)

4.4.4 Reappropriation of old into new media

In *The Language of New Media* (2001), Lev Manovich believes that many strategies and techniques relevant to new media design can be found by looking at the history of visual culture and media, in particular cinema. Jay David Bolter and Richard Gruisin's book, *Remediation* (1999, back cover) argues that 'visual media achieve their cultural significance precisely by paying homage to, rivaling and refashioning earlier media such as perspective painting, photography, film and television.' Screen-based typography is essentially going through the same process of appropriating (or remediating) print-derived knowledge into a usable format for screen. All participants acknowledged that this activity is inevitable as there are few direct precedents to new media. Generally, most participants believed that current designers are far too focused on the appropriation of knowledge rather than the generation of new knowledge from other parallel digital media. One participant went as far as to suggest that 'truly innovative authorship has yet to happen' and went on to predict that the future generation would eventually focus more on new knowledge generation.

4.4.5 Balance between communication forms

The primary role of typography will remain unchanged from its communicative function. The principal issue to be addressed is the balance between typography with other visual and verbal forms of communication available in the digital medium. Designers will need to consider the balance of these competing forms of communication and understands the value each forms brings to the communication of the message.

> 'I can't imagine that language, as a communication medium will diminish. The question is: what will be the balance between oral forms (digitised audio) and verbal forms (typography).' (Professor of New Media Studies)

5.0 Shaping a Tentative Framework

The results from the questionnaire and interview surveys have identified two defining pillars of the framework. They are:

- Medium independence
- Cross-disciplinary influence

5.1 Medium Independence

One of the main findings from the survey was a general consensus that the typographic framework should be independent of medium. Participants were asked to comment on an alternative viewpoint, which places a much higher emphasis on the need to understand and cater for the characteristics of screen-based media in the consideration of the framework. All participants agreed that these two viewpoints are not mutually exclusive. Instead, these viewpoints should be taken as two interlocking components of the framework.

The first component consists of a number of global core-principles (set in historical, technological and application context). While the second component consists of a set of medium-specific principles developed for application in screen-based medium. The relationship between these two components could perhaps be illustrated using different metaphorical descriptions:

Component 1 (Core Principles)	Component 2 (Applications)
Macro	Micro
Content	Container
Global	Local

Table 7.4. Relationship between the two components

5.2 Cross-Disciplinary Influence

The characteristics of new media have long been in existence in established disciplines such as the fine arts, filmmaking and literature. The new media attributes that are relevant to typography are generally acknowledged to be:

- Multi-linking capability
- Interactivity (in the form of user and system engagement)
- Time-based motion

In trying to better understand the implications of these media characteristics, it is perhaps best to first look at past and current communicative forms that still employ these methods. Table 7.5 illustrates the links between each characteristic with existing media most associated with it.

Characteristics	Media
Multi-linking capability	Hypertext Fiction, Computer Games, Literature
Interactivity	Computer Games, Virtual Reality, Interactive Art
Time-Based	Television, Film, Video Art

Table 7.5. New media characteristics found in different media

5.3 Discussion and future development of the framework

The framework presented in this paper is still in its developmental stage. Further development includes developing a detailed taxonomy of typographic knowledge using a communication intent model and cross-referencing it with medium specific subjects. Subsequently, the application of the framework will be tested through a series of action research teaching projects. The final version will provide the basis for the development and delivery of the subject of typography within a screen-based design curriculum. It is designed to facilitate the integrated learning of typography with other new media subjects, and provide recommendations for the application of screen-based typography in a practice-based environment.

6.0 Conclusion

The development of an alternate typographic framework has relied on a process set out to investigate the relevance of current print-derived typographic knowledge and concluded with the identification of factors (specifically from cross-disciplinary sources) that have affected the application of screen-based typography. These factors point to an environment still ruled by technological changes and the constant cycle of knowledge appropriation. Specifically, this process has:

1. Reinforced the value of current print-derived typographic knowledge.
2. Maintained that typography continues to be one of the main tools of communication in screen-based medium.
3. Identified the need for medium specific knowledge to reflect the differences between print and screen.
4. Identified new media attributes that has and will continue to influence the way typography is used in screen-based medium.

The challenge involved in the development of an alternate framework is not only deciding what goes into it, but also devising a practical application for it. The ultimate success of the framework depends on an appropriate implementation plan and strategies to integrate typographic knowledge for specific needs and audiences in both education and practice-based environments.

References

Bolter, J. D. & Grusin, R. (1999) *Remediation: Understanding new media.* Cambridge, Massachusetts: MIT Press.

Buchanan, R. (1998) 'Education and professional practice in design', *Design Issues*, 14, (2), pp. 63-66.

Helfand, J. (1997) *Six essays on design and new media.* New York: Winterhouse Editions.

Heller, S. (ed.) (2004) *The education of a typographer.* New York: Allworth Press.

Knight, P. T. & Arksey, H. (1999) *Interviewing for social scientists: An introductory resource with.* Thousand Oaks, Calif.; London: SAGE.

Manovich, L. (2001) *The language of new media.* Massachusetts: Massachusetts Institute of Technology.

Miles, M. B. & Huberman, A. M. (1994) *Qualitative data analysis: An expanded sourcebook.* 2nd edn. Thousand Oaks, Calif.; London: SAGE.

Oppenheim, A. N. (1992) *Questionnaire design, interviewing and attitude measurement.* 2nd edn.: Pinter Publlishers.

Robson, C. (2002) *Real world research: A resource for social scientists and practitioner-researchers.* 2nd edn. Oxford, UK; Madden, Mass.: Blackwell Publishers.

Sekaran, U. (1992) *Research methods for business: A skill-building approach.* 2nd edn. New Jersey: Wiley.

Strauss, A. L. & Corbin, J. M. (1990) *Basics of qualitative research: Grounded theory procedures and techniques.* Newbury Park, Calif.; London: SAGE.

APPENDIX 8

Action Research Projects with Multimedia and Graphic Design Students

8.1 Data Collection Methods and Tools Analysis

An analysis on the advantages and disadvantages of various data collection methods for action research projects.

(Please pull out the inserts to view table)

Categories	Methods	Environment	Description	Aim	Advantages / Disadvantages	Reliability (in events observed & interpretation)	Collection time
Observational and narrative research methods	1. Diaries / journals: 4 categories: - Day account - Reflection on events - Student's voice - Tutor's voice	Observation during class and post-reflective diary entry after class.	A personal document, records of events, thoughts, feelings and beliefs captured at, or just after, the time they have occurred, thus providing a 'mood dimension' to human action. (McKernan, 1996, p84)	1. To describe the events of the class in full. 2. To reflect on the events.	**Advantages** 1. An instant and informal way for the researcher to log her observation. 2. Can be used in a general and flexible manner-allowing different types of diary entries i.e. daily, monthly etc. **Disadvantages** 1. Non-objective as it is based more on personal interpretations. 2. Regular entry must be made into the diary	Medium Based more on personal feelings rather than objective thoughts. However post-reflection may be able to provide a more objective viewpoint.	Post-class
	2. Video Recording	Video camera set up before class and record unobtrusively.	'Naturalistic observation in the natural setting of the behaviour.' (McKernan, 1996, p59)	To provide an accurate description of the event and to help in reflective diary entry. Also function as an aide-memoire.	**Advantages** (McKernan, 1996, p105) 1. An accurate recoding of the event. 2. A comprehensive record 3. Can be used as exemplars. 4. Both teacher and pupil can be recorded **Disadvantages** 1. Participants may feel uncomfortable at being taped which might distort their behaviour. 2. Time-consuming to transcribe 3. Demands an observer/camera person 4. Expensive equipment required.	High (if there are no technical problems) Although care must be taken to ensure that the equipment is properly set up and is recording properly.	During selected classes
	3. Observational Field Notes	During class, in instances where the researcher is observing the students' presentations and interactions with the tutor. Used mainly for noting down 'happenings' and as an aide-memoire.	Focuses on description of events rather than interpretation.	To observe student behaviours and reaction in the classroom.	**Advantages** (McKernan, 1996, p96) 1. Simple records using direct observation. 2. No outside observer is necessary. 3. Problems can be studied in the teacher's own time. 4. Excellent as a 'running ethnographic record' of the action 5. Provide a useful database for the writing of a solid case study. 6. Can function as an aide-memoire. 7. Provide clues and data not collected by quantified methods. **Disadvantages** 1. Difficult to record lengthy conversation by longhand. 2. Problems of researcher response, bias and subjectivity. 3. Time consuming to write up notes on characters. 4. Should triangulate with other methods, for e.g. diaries. 5. Difficult to structure and file.	Generally high. Based on the diligence of the researcher to take accurate notes during class.	During every class
	4. Photographic Log	Occasionally during class, especially presentation material by students.	A descriptive log of the classes and can be used as part of the report evidence.	To record the artefacts produced by the students.	**Advantages** 1. Can be used to record accurate artefacts produced by the students. 2. A good visual supplement to other forms of data collection techniques. **Disadvantages** 1. Disrupts the class. 2. Problem of out of context interpretations.	High	During selected class

Table 8.1 Action Research Projects: Data Collection Methods Analysis

8.1 Data Collection Methods and Tools Analysis (continued)

An analysis on the advantages and disadvantages of various data collection methods for action research projects.

(Please pull out the inserts to view table)

Categories	Methods	Environment	Description	Aim	Advantages / Disadvantages	Reliability (in events observed & interpretation)	Collection time
Non-observational, survey and self-report techniques	5. Semi-structured Interview	Tutor will be interviewed outside of the class environment.	A method involving the researcher asking the participant structured questions and is free to probe areas of interest if it arises.	To uncover the opinion of the tutor about the structure, aims, delivery and outcomes of the project.	**Advantages** 1. In-depth enquiry of the interviewee's belief and attitude. 2. Flexible to pursue interesting topics, which might arise. **Disadvantages** 1. Time-consuming to conduct, transcribe and analyse. 2. Difficult to control the focus of the conversation.	Medium to high	Post-Class
Critical reflective and evaluative research methods.	6. Course Evaluation (in the form of a questionnaire)	To be completed by the student after the end of the project.	As a method for student to appraise the content and quality of the programme and teaching.	• To provide information to the researcher on ways to better the programme content, structure and delivery. • To identify any change in typographic knowledge and in what aspect. • To identify if their preconception of typography has changed.	**Advantages** 1. An easy and quick way to provide feedback of the programme to the tutor. 2. Provides students with the opportunity to appraise the programme. **Disadvantages** 1. Possible distortion of the data if one or more students do not provide an objective evaluation. 2. Dependent on the length, it can be time-consuming to analyse. 3. Low response rate.	Medium	Post-Class
	7. Artefact Analysis	To be assessed by both the researcher and tutor.	A method to assess the kind of work created out of the programme.	• To assess the quality of work produced by the students. • To observe any differences or emphasis in the final solution.	**Advantages** An opportunity to evaluate the quality of different design solutions from individual students. **Disadvantages** Can be subjective due to the evaluation of the tutor and the researcher.	Medium	Post-Class

Table 8.1 Action Research Projects: Data Collection Methods Analysis (continued)

8.2.1 Type Lecture - A Selection of Key Slides

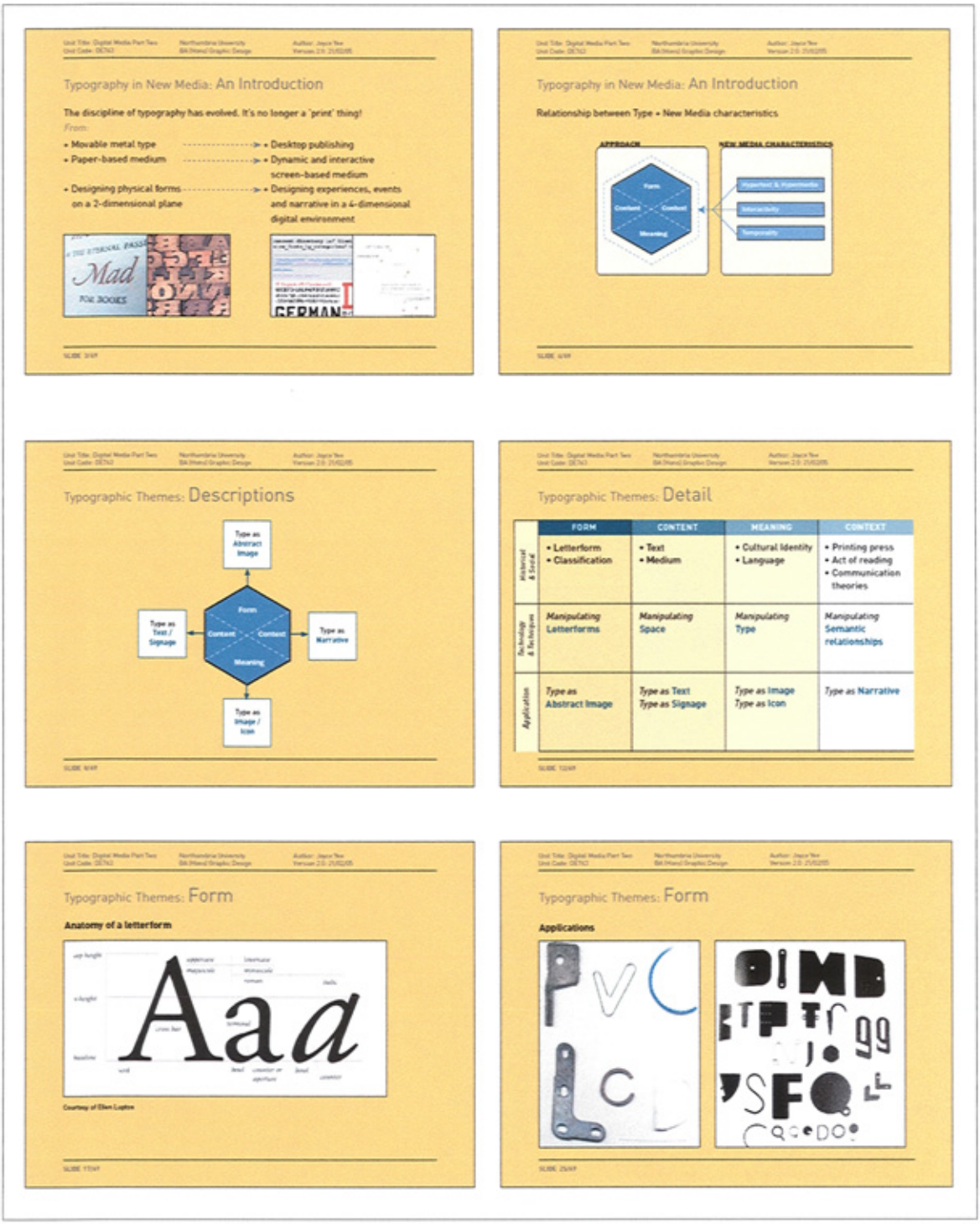


Figure 8.1 A Selection of Key Slides from the Type Lecture: Introduction, Typographic Themes Descriptions, Details and Form

8.2.1 Type Lecture - A Selection of Key Slides

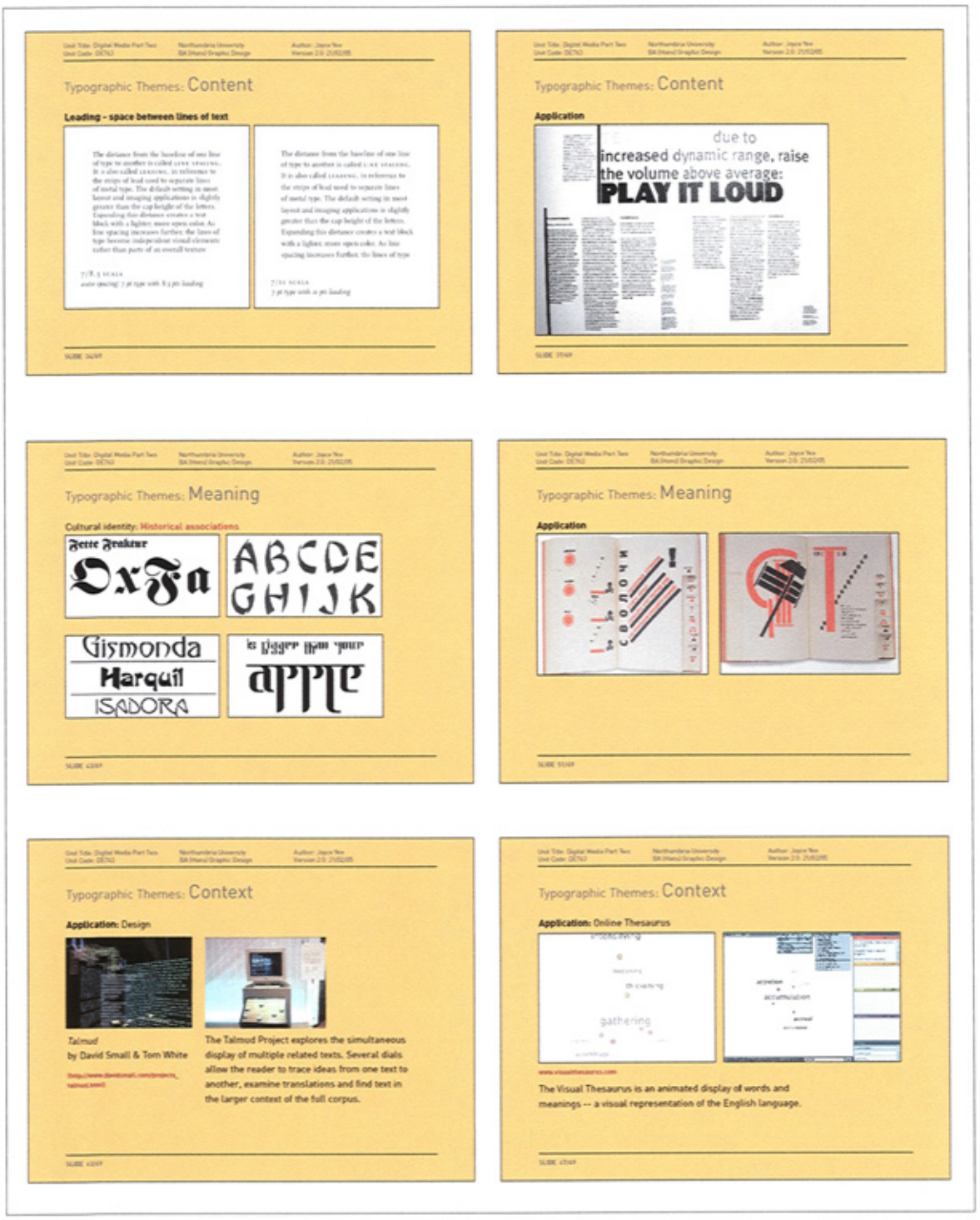


Figure 8.2 A Selection of Key Slides from the Type Lecture: Content, Meaning (later changed to Expression) and Context

8.2.2 Hypermedia Lecture - A Selection of Key Slides

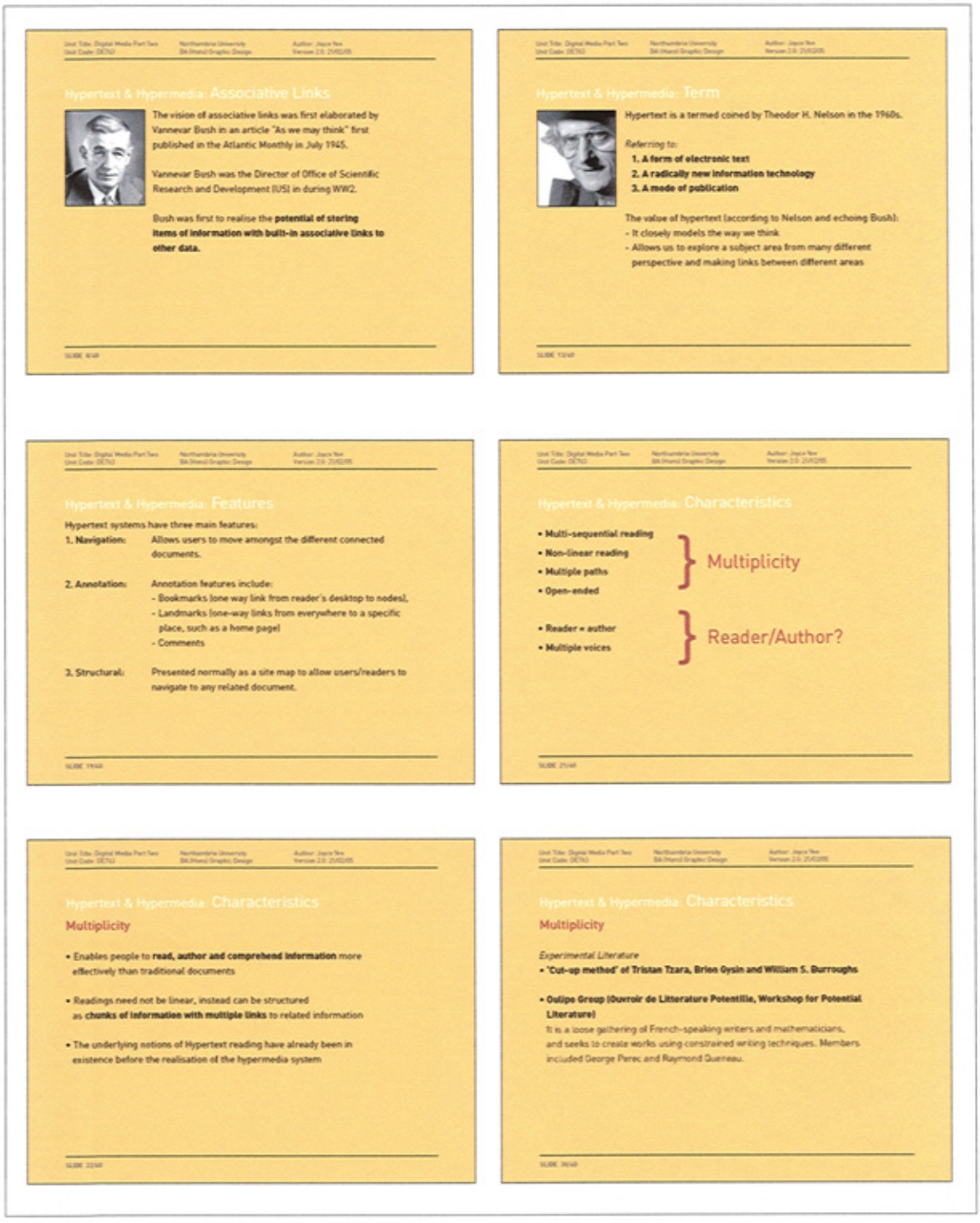


Figure 8.3 A Selection of Key Slides from the Hypermedia Lecture: Definition, Features and Characteristics

8.2.2 Hypermedia Lecture - A Selection of Key Slides

Figure 8.4 A Selection of Key Slides from the Hypermedia Lecture: Multiplicity and Authorship

8.2.3 Interactivity Lecture - A Selection of Key Slides

Figure 8.5 A Selection of Key Slides from the Interactivity Lecture: Description and Levels

8.2.3 Interactivity Lecture - A Selection of Key Slides

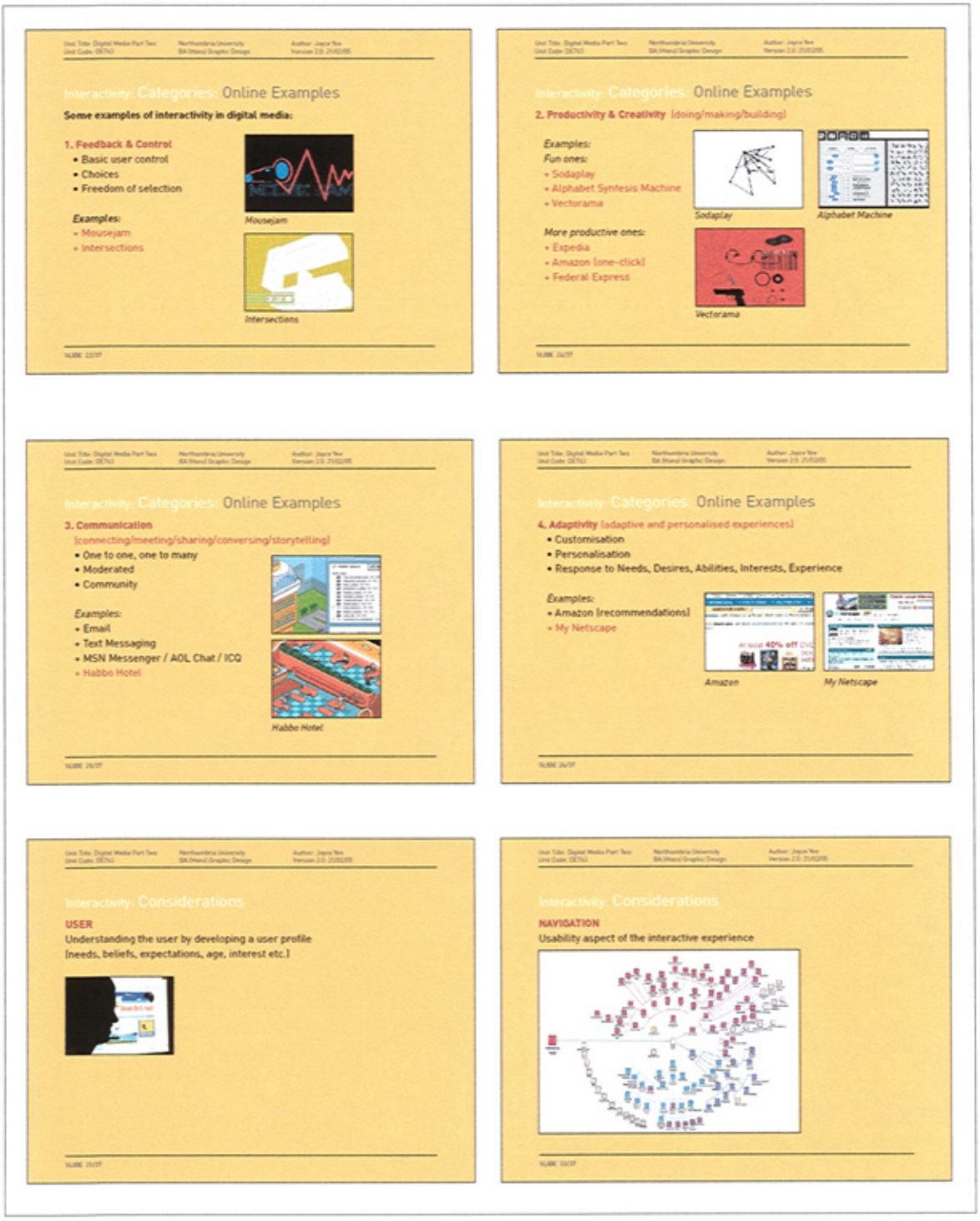


Figure 8.6 A Selection of Key Slides from the Interactivity Lecture: Examples and Considerations

8.2.4 Temporality Lecture - A Selection of Key Slides

Figure 8.7 A Selection of Key Slides from the Temporality Lecture: Development, Types and Narrative

8.2.4 Temporality Lecture - A Selection of Key Slides

Figure 8.8 A Selection of Key Slides from the Temporality Lecture: Space, Time and Sound

8.3.1 Action Research Project 1: Brief

Level *Five*
Module *DE791, Graphic Edge 2*
Part *2 Option*

Project Title

Storyteller

Brief

The 20th century witnessed the rapid evolution of the 'book cover' from a functional layer protecting the fragile paper inside, into a sophisticated visual tableau through which the author's message is interpreted and communicated, from the pioneering designs of the Modernist movement to the digital collages of the Internet age.

A book jacket or cover is a selling device, close to advertising in its form and purpose, but is also specific to the particular 'book' product.

You are asked to put yourself in the position of Illustrator/Design Director for this project which will be split into two parts.

Part One being the relaunch of one of the following author's books. You will be expected to design and mock-up *four* book jackets with reference to four well known titles (Select one author from the list below).

Particular attention will be made to design layout and the use of design templates. Developing ideas through 'roughs' to finished artefacts, print preparation, binding, proofing and full colour outputs.

The style of execution could include any media - stencils, monoprints, montage, illustration, embossing, photography, scraffitto, painting, digital, etc. (This part will be undertaken on Tuesday afternoons).

Authors (Choose one and research into their most familiar titles):
Russell Mills
Bruce Chatwin
Milan Kundera
Ian McEwan
Gabriel Garcia Marques
Franz Kafka

This part will run concurrently with the second part (on a Thursday afternoon) which will entail the designing of an 'interactive type promo' to promote the relaunch of the book titles and author.

Overall Aims

To develop an awareness of contemporary publishing both online and offline.

To further develop the intellectual analysis of a design brief and the creative development of design solutions to more sophisticated and 'knowing' conclusions.

To continue to consider contemporary trends with relation to graphical outputs.

To continue to develop computer skills and knowledge of publishing software and related hardware to the point of thorough cognisance and confidence.

Specific Aims for Part 2

To enable you to gain an awareness of cross-disciplinary influences on typography across media.

To enable you to gain an understanding of the principles of type in relation to new media.

To develop your skills and application of screen-based typography to the level where you are able to apply typography in a confident and informed manner.

Criteria for assessment

Design Document:	
Research and Concepts	*15%*
Development	*15%*
Book Cover Prototypes	*30%*
Motion Graphics Prototypes	*30%*
Two A3 Portfolio Sheets (at least)	*10%*

Multimedia Design
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Tutors *Kathryn McKelvey, Joyce Yee*
Version *1.0, 25.01.04*

Page 1

Figure 8.9 Action Research Project 1 Brief (Page 1)

8.3.1 Action Research Project 1: Brief

Level *Five*
Module *DE791, Graphic Edge 2*
Part *2 Option*

Part Two is about the design and production of an 'interactive type promo' with particular attention to the following principles of New Media (Hypertext & Hypermedia, Time-based Media and Interactive Media).

Part Two – Interactive Type Promo Brief

You are required to design two online interactive typographic pieces which will be used to promote your chosen books in Part 1 of this module. Choose two books out of your list of four to base your promo on.

While the book jackets will be an offline promotional element, this interactive type promo will be the online promotional element of the books. You are encouraged to think of the two components (book jackets and interactive type promo) as one project with two deliverables. The design solution for both components must be conceptually linked and stylistically similar. This project must contain some elements of interactive storytelling and dynamic/ moving typography.

Think of Amazon's 'Look Inside' feature on its web site. It allows potential buyers to look inside the pages of some books. It shows scanned pages of the book, normally consisting of the contents page, introduction page and some excerpts from within one of its chapters. At the moment, it is very static and while it does give a sense of what is in the book, it does not present the expressive element of the book. Your promotional piece should be designed as an interactive 'look inside' feature. It does not need to be specific to the Amazon web site and instead can be used on any web site which sells or promote the books.

It may help to try exploring your initial concept for the pieces by trying to understand the four different ways in which typography can be applied:

Typographic Form
Typographic Content
Typographic Meaning
Typographic Context

These four themes will be introduced and explained in the first lecture.

Reference

Hypertext and Hypermedia:

Borges, J.L. *(1941) 'The garden of the forking paths.' In D. A. Yates and J. E. Irby, (Ed.) Labrinths: selected stories and other writings, Trans. D. A. Yates. New York: New Directions, p.19-29.* **(given out)**
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Interactive Media:

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McCloud, S. *(1999) Understanding comics (The invisible art). U. S: HarperCollins Publishers.*
Meadows, M. S. *(2003) Pause and Effect: The art of interactive narrative. Indianapolis: Indiana: New Riders.*
Shedorff, N. *(2001) Experience Design 1. Indianapolis: Indiana: New Riders.*

Figure 8.10 Action Research Project 1 Brief (Page 2)

8.3.1 Action Research Project 1: Brief

Level *Five*
Module *DE791, Graphic Edge 2*
Part *2 Option*

Part Two is about the design and production of an 'interactive type promo' with particular attention to the following principles of New Media (Hypertext & Hypermedia, Time-based Media and Interactive Media).

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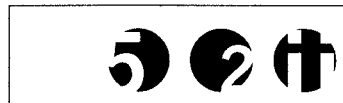
Figure 8.11 Action Research Project 1 Brief (Page 3)

8.3.2 Action Research Project 2: Brief



Level *Five*
Module *DE791, Graphic Edge 2*
Part *2 Option*

Project Title

Storyteller

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Authors (Choose one and research into their most familiar titles):
Martin Amis
Italo Calvino
Milan Kundera
Orhan Pamuk
Irvine Welsh

This part will run concurrently with the second part (on a Thursday afternoon) which will entail the designing of an 'interactive type promo' to promote the relaunch of the book titles and author.

Overall Aims

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To continue to develop computer skills and knowledge of publishing software and related hardware to the point of thorough cognisance and confidence.

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To enable you to gain an understanding of the principles of type in relation to new media.

To develop your skills and application of screen-based typography to the level where you are able to apply typography in a confident and informed manner.

Criteria for assessment

Design Document:

Research and Concepts	*10%*
Development	*10%*
Postcards & Sketchbooks	*15%*
Book Cover Prototypes	*30%*
Motion Graphics Prototypes	*30%*
Two A3 Portfolio Sheets (at least)	*5%*

Figure 8.12 Action Research Project 2 Brief (Page 1)

8.3.2 Action Research Project 2: Brief

Level *Five*
Module *DE791, Graphic Edge 2*
Part *2 Option*

Part Two is about the design and production of an 'interactive type promo' with particular attention to the following principles of New Media (Hypertext & Hypermedia, Interactivity and Temporality).

Part Two – Interactive Type Promo Brief
You are required to design **two** online interactive typographic pieces which will be used to promote your chosen books in Part 1 of this module.

Instructions:
1. **Choose two books out of your list of four to base your promo on.**
2. **You must select a passage of text (min 150 words long) from your chosen books and use it in your design. The chosen excerpt must reflect your interpretation of the story. How you use the text (i.e. keep it together, chop it up, combine with other texts) is up to you.**
3. **This project must contain elements of interactive storytelling and dynamic/moving typography.**

While the book jackets will be an offline promotional element, this interactive type promo will be the online promotional element of the books. You are encouraged to think of the two components (book jackets and interactive type promo) as one project with two deliverables. The design solution for both components must be conceptually linked and stylistically similar.

Think of Amazon's 'Look Inside' feature on its web site. It allows potential buyers to look inside the pages of some books. It shows scanned pages of the book, normally consisting of the contents page, introduction page and some excerpts from within one of its chapters. At the moment, it is very static and while it does give a sense of what is in the book, it does not present the expressive element of the book. Your promotional piece should be designed as an interactive 'look inside' feature. It does not need to be specific to the Amazon web site and instead can be used on any web site which sells or promote the books.

It may help to try exploring your initial concept for the pieces by trying to understand the four different ways in which typography can be applied:

Type as an abstract image (FORM)
Type as text (CONTENT)
Type as an image/icon (MEANING)
Type as narrative (CONTEXT)

These four themes will be introduced and explained in the first lecture.

Reference

Hypertext and Hypermedia:

Borges, J.L. *(1941) 'The garden of the forking paths.' In D. A. Yates and J. E. Irby, (Ed.) Labrinths: selected stories and other writings, Trans. D. A. Yates. New York: New Directions, p.19-29.* **(given out)**
Bush, V. *(Ed.) (1945) 'As we may think.' The Atlantic Monthly, 176(1). p101-108* **(given out)**
Cotton, J., and Oliver, R. *(1997) Understanding hypermedia 2.000: multimedia origins, internet origins. London: Phaidon Press.* **(good entry level book to the world of Hypermedia)**
Landow, G.P. *(1992) Hypertext: the convergence of contemporary critical theory and technology. Baltimore: Johns Hopkins University Press.*
Nelson, T. (1965) *'A file structure for the complex, the changing and the indeterminate'. In Lewis Winner, (Ed.) Association for Computing Machinery: Proceedings of the 20th National Conference, p.84-100.*

Temporality:

Bellantoni, J., and Woolman, M. *(1999) Type in motion: innovations in digital graphics. London: Thames and Hudson.*
Bellantoni, J., and Woolman, M. *(2001) Moving type: designing for time and space.* New York: Rizzoli.
Nelmes, J. *(Ed.) (1999) Introduction to film studies (2nd ed). London: Routledge. (Chapter 4, 8, 13)*

Interactivity:

Laurel, B. *(1991) Computers as Theatre. Reading, Mass: Addison-Wesley Pub Co.*
McCloud, S. *(1999) Understanding comics (The invisible art). U. S: HarperCollins Publishers.*
Meadows, M. S. *(2003) Pause and Effect: The art of interactive narrative. Indianapolis: Indiana: New Riders.*
Shedorff, N. *(2001) Experience Design 1. Indianapolis: Indiana: New Riders.*

Figure 8.13 Action Research Project 2 Brief (Page 2)

8.3.2 Action Research Project 2: Brief

Level *Five*
Module *DE791, Graphic Edge 2*
Part *2 Option*

Work Requirements

Both parts should be considered, equally, in the Design Document in terms of concept, development and final prototyping.

Design Document:

Research:
Research should be about the author and the titles. (You should aim to read one of the titles!), also about book jacket design and other relevant material. Research re. themes from team activity. Research on current methods of book promotions.

Concepts:
Development of three concepts for four titles from a specific author.
Development of three concepts for the two interactive type promos.

Development:
Develop one concept for both projects. The development document must contain experimentation with images, texts, styles, media use, advanced layouts, mock-ups, storyboards and early prototypes.

Book Jacket Mock-ups:
A range of 4 jackets for a chosen author.

Interactive Type Promos:
– Two system architecture
– Two storyboards
– Two working online interactive type promos
– A sample page of a web site demonstrating how and where the type promos will be used.

Submission Date

Week of 15th March 2004 - date to be confirmed

Important Notes

80% attendance of all lectures will be required in order to pass the project.

Please note that no excuses will be accepted for lost work. Backup. Spelling will be taken into account so proof read all your work (and get someone else to.)

All flat work must be submitted in one piece, no bigger than an A2 portfolio. You must put all work submitted into some kind of container such as a portfolio. Any disks, prototypes, mock-ups etc. should be included in such a way, as they do not become separated from flat work. All elements should be labelled clearly.

Typographic Form and Content:

Bringhurst, R. *(1996) The elements of typographic style (2nd Ed). Point Roberts, WA: Hartley & Marks.*
Carter, R., Day, B. & Meggs, P. *(2002) Typographic Design: Form and Communication (3rd ed). Hoboken: New Jersey.*
Lupton, E. & Miller, J. Abbott *(1999) Design/Writing/Research (2nd Ed). London: Phaidon.*
Meggs, P. B. *(1983) A history of graphic design. London: Allen Lane.*
Miller, J. Abbott *(1996) Dimensional typography: case studies on the shape of letters in virtual environments. Princeton: Princeton Architectural Press.*
Muller-Brockmann, J. *(1996) The grid system in graphic design. Sulgen: Niggli.*

Typographic Meaning and Context:

Drucker, J. *(1994) The visible word, experimental typography and modern art, 1909-1923. Chicago: University of Chicago Press.*
McLuhan, M. *(1962) The gutenberg galaxy: the making of typographic man. London: Routledge & Kegan Paul.*
Swann, C. *(1991) Language and Typography. London: Lund Humphries.*
Wye, D. & Rowell, M. *(2002) The Russion Avant Garde Books: 1910-1934. New York: Museum of Modern Art.*

Book Cover Design:

Powers, A., *(2001) Front Cover, Great Book Jacket and Cover Design, Mitchell Beazley.*
Heller, S., Chwast, S., *(1995), Jackets Required, San Francisco.*
Schreuders, P., *(1981), The Book of Paperbacks, A Visual History of the Paperback Book, Virgin Books Ltd.*

Figure 8.14 Action Research Project 2 Brief (Page 3)

8.3.3 Action Research Project 3: Brief

Second Year Project Brief BA (Hons) Graphic Design **Semester Two**

Module De763: Digital Media Part Two (double module. Part two valued at 10 credit points)

Module Tutor Ted Carden. Support tutor: Sheila Trow

Module Synopsis This module allows designers and illustrators to develop teamworking skills in research & development while exploring conceptual design using traditional and digital methods.

Aims & Objectives Problem solving via a challenging creative project resulting in increased design experience and the acquisition of further development of software skills mirroring those currently used in the graphic design industry • To gain an understanding of research, design, production, finishing, and presentation techniques analogous to the design industry.

Project Title **Beowulf Coded**

Brief You are now working alone, not as part of a group.

The poem *Beowulf* remains central to the brief. In groups you tackled *Beowulf Decoded* as a 'blue sky' project, interpreting the subject any way you wished. Now your task is to **design and build** an interactive website showcasing a **30 second** 'teaser' trailer for the film *Beowulf* based **explicitly** on the **traditional** Anglo-Saxon poem. The trailer can be animation or video or a combination of both but it must be approximately **80% typographic** and **20% image-based**. Sounds can be your own, 'borrowed' or a combination.

Your website must contain at least three **additional** interactive **hyperlinks** to extra **related** content. You define what that content is, but all extra pages must have the ability to navigate back to the **home page.**

Finally, choosing one of the following target consumer groups listed below, create an **innovative, imaginative** and **challenging** design which is 'right' for the market profile and expectations of that group:

- Children 8 to 14 years old. (think Pixar or DreamWorks; not as saccharine or infantile as Disney)
- 12–15 rated mainstream (think Hollywood blockbuster; LOTR, Master & Commander, Gladiator)
- 'Art House' cinema crowd (think avant-garde; Bergmann, Kurasawa, early David Lynch, Dogma)

Requirements

- **Packaged** CD containing fully functional website + CD containing digital development work
- Sketchbook of **ideas, experimentation** and **concept development** work
- Type written rationale (*max 400 words, sans serif, 14pt, spellchecked*) outlining your **approach** and **solution** to the brief.
- Full attendance at all taught sessions.

Reading List

Beowulf by Seamus Heaney, Faber and Faber ISBN: 0-571-20376-0
The Art & Science of Web Design, Jeffrey Veen, New Riders ISBN: 0-7897-2370-0
Designing Web Usability, Jakob Nielsen, New Riders ISBN: 1-56205-810-X
Books on web design & animation using either Dreamweaver MX, Adobe GoLive or Flash MX
Creating Motion Graphics with After Effects, Trish & Chris Meyer, CMP Books ISBN: 0-87930-606-8

Time Management See Module Timetable.

Assessment Criteria & Percentage Values

Total % Value = 100

5	Studentship	30	Research, Experimentation & development
25	Technical Ability & Presentation	40	Creative Solution

N.B. It is your responsibility to negotiate an extended deadline if appropriate and/or complete a Personal Extenuating Circumstances Form which must have all relevant evidence (e.g. medicate certificate) attached.

Submission Date: Monday 16th May 2005 at 9.30 a.m. in the Drawing Studio

Ted_Feb_2005

Figure 8.15 Action Research Project 3 Brief

8.4.1 Action Research Project 1: Class Schedule

Weeks	Lessons	Actions
Week 1	Lesson 1	Introduction to the brief – expectations and output 'Introduction to book jackets' lecture by Kathryn McKelvey Students to begin research
	Lesson 2	Type lecture by Joyce Yee Hypertext and Hypermedia lecture by Joyce Yee Individual tutorials
Week 2	Lesson 3	Research time Concept development time
	Lesson 4	Time-Based lecture by Joyce Yee Typographic exercise based on lecture Concept development time
Week 3	Lesson 5	Print technique presentation by Kathryn McKelvey Concept development time
	Lesson 6	Concept presentation (covers and type) by the students
Week 4	Lesson 7	Design Development (covers)
	Lesson 8	Design Development (type)
Week 5	Lesson 9	Prototype development (covers)
	Lesson 10	Prototype development (type)
Week 6	Lesson 11	Prototype development (covers)
	Lesson 12	Prototype development (type)

Table 8.2. Pilot study project schedule (lessons where the researcher was present is shaded in grey)

8.4.2 Action Research Project 2: Class Schedule

Weeks	Lessons	Actions
Week 1	Lesson 1	Explaining the brief – expectations and output 'Introduction to book jackets' lecture by Kathryn McKelvey Past students' project examples Postcard presentation by the students
	Lesson 2	Type lecture by Joyce Yee Research time
Week 2	Lesson 3	Hypertext and Hypermedia lecture by Joyce Yee Concept development time
	Lesson 4	Concept development time
Week 3	Lesson 5	Interactive Lecture by Joyce Yee Critique partners were assigned Concept development time
	Lesson 6	Concept presentation (covers and type) by the students
Week 4	Lesson 7	Print technique presentation by Kathryn McKelvey Time-based lecture by Joyce Yee Design Development
	Lesson 8	Stage Presentation Final mock-up of the book covers Storyboard presentation for the interactive type pieces
Three Week Christmas Break		
Week 5	Lesson 9	Prototype development (type)
	Lesson 10	Prototype development (type)

Table 8.3. Action Research Project 2: Class Schedule

8.4.3 Action Research Project 3: Class Schedule

Weeks	Lessons	Actions
Week 1	Monday	*Morning* Develop paper-based multiple ideas for website designs and 'teaser' trailer storyboards *Afternoon* Joyce Yee Lecture: Typography in Digital Media Continue design development
	Tuesday	*Morning* Joyce Yee Lecture: Hypertext & Hypermedia Continue design development *Afternoon* Visualize (in full-colour) three alternative website layouts & refine selected storyboard
	Wednesday	*Morning* History & Critique (external class)
	Thursday	*Morning* Hand in selected full-colour website layout and final 'teaser' trailer storyboard *Afternoon* Joyce Yee Lecture: Interactivity Individual critique session organized by sign-up sheet
	Friday	*Morning* Joyce Yee Lecture: Temporality Individual critique session organized by sign-up sheet *Afternoon* Individual critique session organized by sign-up sheet
Week 2	Monday	Lecture & lab work
	Tuesday	Lecture & lab work
	Wednesday	History & Critique (external class)
	Thursday	*Morning* Begin work on final project elements
	Friday	Continue work on final project elements

Table 8.4. Action Research Project 3: Class Schedule

Weeks	Lessons	Actions
Week 3	Monday	*Afternoon* Small group critiques
	Tuesday	Small group critique
	Wednesday	History & Critique (external class)
	Thursday	*Morning* Ted available for project surgery
	Friday	Hand-in website mockups & PP on disk Selected Powerpoint (PP) presentations

Table 8.4. Action Research Project 3: Class Schedule (continued)

8.5.1 A Sample of Field Notes Entries

Action Research Project 1: Student Learning Project
Field Notes

Legend:
Dimensions of Descriptive Observation (Robson, 2002:p320)

1. Space – layout of the physical setting; rooms, outdoor spaces, etc.
2. Actors – the names and relevant details of the people involved
3. Activities – the various activities of the actors
4. Objects – physical elements: furniture etc.
5. Acts – specific individual actions
6. Events – particular occasions, e.g. meetings
7. Time – the sequence of events
8. Goals – what actors are attempting to accomplish
9. Feelings – emotions in particular contexts

Five types of records (ibid, p:323)

1. **Running description** – Specific, concrete, descriptions of events, who is involved, conversations. Keep any inferences out (e.g. ('A was trying to get B to…').
2. **Recalls of forgotten material** – Things that come back to you later.
3. **Interpretive ideas** – Notes offering an analysis of the situation. You will add supportive or elaborative material
4. **Personal impressions and feelings** – your subjective reactions
5. **Reminder to look for additional information** – reminder to check with A about B, takes a look at C, etc.

1

Figure 8.16 Field Notes Observations: Categories Guide

8.5.1 A Sample of Field Notes Entries: Project 1

Action Research Project 1: Student Learning Project
Field Notes

Date: 19/02/04 (Thursday)

[A] Running Descriptive Observation
3rd Lesson
This lesson was supposed to be the concept presentation. However, due to students' involvement with the RED exhibition on Tuesday, Kath has shifted it to next Tuesday. Which is not a bad thing, as it gave me a chance to talk to the students about my project. It also seems like they were not ready to present the concept yet. Wanted to observe how Kath was discussing with the students, but somehow got sidetracked to seeing individual students on our own. Must go on a strategy of seeing each student together. I agreed to it before thinking about it!

1. Space – Rm 304, computer lab with a table in the middle for discussion
2. Actors – Dan, Damian, Komo, Abigail, Helen, Jennifer, Paul, Marc, Alan, Jonathan, Kath
3. Activities – Each student were working on their own until they got their turn to speak to one of the tutors.
4. Objects – Type exercises, design documents, design visuals on screen
5. Acts
   a. *Exercise Presentation/Discussion*
   At the start of the class, tried to get everyone to present their typographic exercises. Unfortunately, only 6 pieces were shown, by 3 students (I think). Dan, Paul and (?) did not print them out. Damian, Helen and Abigail presented theirs. Showed 2 distinct approaches: Helen and Abigail did a more visual and expressive interpretation of the poem. While Damian had one piece which emphasised the text/word relationship with type size. His other piece showed a combination of the two – making a text paragraph shape (a church) and emphasising individual word in the lines. His rationale for this piece was that was about death. Dan had 2 different pieces, one reversed out in black, one on white. The black one was bolder while the white background was more subtle and light.

   b. Individual Discussions – Dan
   Started with him showing me the type exercise which he did not print out. He showed 2 pieces. One was reversed out a black and the other on a white background. Although both used the same typeface, style and orientation – the black background created a bolder impression. The white background was subtler due to the fact of the background and the smaller contrast in type sizes. He then wanted more clarification of the type brief. He cannot visualise the final tangible product. I re-iterated that it needs to be interactive and animating representation of the book. He discussed two different ideas he had for the book and the type project. Conceptually it did not matched. The book idea was driven more by the idea or war, suffering while the type idea is driven more by a style he has seen in the Moving Type book. Liked the idea of using the pattern that a drop of blood makes, but was not convinced he really worked out his type concept. He showed me the beginning of his design document – starting with his research into the current book covers used for McEwan. Has decided not to use imagery in his pieces. Reason being that he thought that the current books only appealed to a limited range of people because the photographs create a strong image and identity. He wanted to create pieces for a wider audience. He only wants to use abstract and graphical shapes with type. However, I am not convinced his reason is sound.

Figure 8.17 Field Notes Entry on 19.02.2004 (Page 1)

8.5.1 A Sample of Field Notes Entries: Project 1

c. Individual Discussions – Damian
He was part of the discussion with Dan. He too had questions about the type brief. However, he seemed happy with my elaborations of it. Presented about 3 different design of the book cover on Kafka's Trial. Used it to talk about his concept of wanted to create a feeling of 'messed up', 'confused' and 'obscure' message. These key messages will be reflected in the type project: falling letters – showing disorder and then letting the user piece together their own words and sentences.

d. Individual Discussions – Komo
Did not show any visuals. Only wanted clarification on the brief – namely the number of concept required for the type and book jacket and how many final type project to hand it.

e. Individual Discussions – Helen
'Do not know where to start' Her problem was that her books consist of 2 children's book and 2 adult's book. This has made it difficult to design them or to conceptualise their design as a set. She is quite sure that she wants to use one of the children's books in the interactive project – 'The Daydreamers' because of the highly expressive stories contained in it. Seems pretty confident that she knows how to tackle the type project.

F. Individual Discussions – Abigail
Did not show any visual. Was reading her book on Kafka. Just mentioned that she needed to sort out the concept for the book before thinking about the type. I told her that she really should think of both project together and that she should decide on her concept before applying any media to it first. Used the analogy of a film poster and film trailer. Representing and promoting the same film, but performing different functions.

E. Individual Discussions – Jennifer
Showed visuals on collage. Wanted to use that style to represent the multiple layers of Kundera's writing. Peeling off layers. I thought it was a good idea and that she should pursue it. She could get users to peel off the layers to reveal new meanings, words, or parts of words. Allowing the readers to create their own narrative.

6. Events – 3rd class (for myself) 6th lesson for the students
7. Time – from 1pm –3.00pm. Most of the students left at about 3pm. Spent 3-4pm writing up my field notes. Spoke to Dan the longest (about 20mins). The rest of the students, between 5-15mins.
8. Goals – clarifying project briefs, showing visuals and discussing concepts
9. Feelings - students
   a. Helen – Moan about having to do the design document. Takes up too much time and not enough time to produce the projects. Also moaning about the fact that Jamie's class also requires a presentation on Tuesday.
   b. Dan – seem pretty enthusiastic about the project. He claims that it his favourite project this term.

[B] Recalls of forgotten material
N/A

[C] Interpretive Ideas

1. Student asked me about both book jackets and type project. In a way, it is good, as they do not see the separation of the projects with the tutors.
2. However, they do treat the concepts for the book and type as separate (ref to section [D])

Figure 8.18 Field Notes Entry on 19.02.2004 (Page 2)

8.5.1 A Sample of Field Notes Entries: Project 1

[D] Personal Impression and Feelings

Did not really have a successful discussion about the type exercise. Maybe I did not take control or had any real idea what to do with it. The students were not that interested or prepared to show it.

Did not manage to talk to all the students. I think in total, there were ten students who turn up for the class. (Have to check with Kath on this) I only talked to Dan, Damian, Komo, Abigail, Helen, Jennifer and Marc (briefly). I did not talk to Paul and two others. They left after chatting with Kath. Was not sure if they did not have any question for me, or they only needed to chat with Kath. Maybe they were not ready for my part yet. An interesting observation: most talked about the concepts using the book jackets as their starting point – almost as if they did not get that part right, they would not be able to think about how to design the interactive part. Damian, Dan, Abigail, Jennifer and Helen already have visuals in the form of a book cover. Komo have not started yet.

Had a useful chat with Kath at the end of the class, to discuss about the issues above. She was disappointed that the rest of the students did not stay to chat with me. Moved on to talk about how the students are progressing. 'Damian was racing ahead, he is quick to start but I want him to slow down, and think this through a bit'. I took this to mean that she wanted him to spend more time conceptualising and playing around with a few more ideas before starting his visual design. I said that I was quite excited about Jen's work and her using collage. She said that Jen is really good in using more art-based materials. I felt that the class is divided up into two main groups: one that spend time in conceptualising, and the other which goes straight into wanting to start designing. Who falls into these categories? So far, the 1st group: Paul (from Kath's POV), Jen (mine POV). The 2nd: Dan, Damian.

We were both impressed with the level of research and knowledge they had with their authors. Even though not all of them read their chosen author's book, they manage to tell me about them in a coherent and clear manner. I think only the girls have read books specifically for this project. Not sure about the boys. Abigail is reading Kafka's 'The Trial', Helen has read McEwan 'Daydreamers', Jen has read Kundera's 'Laughable Loves'.

Overheard from Kath's discussion with Dan about his marks in the previous Graphic Edge class. Her criticism of his work is that he tends to take the safer option in his project execution. I take this to mean that he is not very adventurous in how he is developing his concepts. Not cutting edge? Could be useful to understand a bit more about the students.

Overall, was satisfied with the lesson. Managed to take quite precise notes. Though I wanted to observe more on Kath's tutorials with the students. Slightly unhappy with the way the class responded to the type exercise and then to the way the tutorial was split up. It just naturally ended up this way. Would like to try to conduct joint tutorials together to ensure that each student get the benefit of 2 tutors. Will start this with concept presentation and hopefully the next tutorials can be jointly conducted. In a way, this was a new phenomenon as the students missed their tutorial time with Kath. Needs to observe how this situation will change when the schedule gets back to normal.

[E] Reminder to look out for additional info

1. Why are the students starting to think about the concepts from the book jacket's point of view?
2. Is it easier for them to create visuals for something more tangible? (Kath's view)
3. Was it because it was introduced first?
4. Was it because it was a project set by Kath, their main tutor?
5. Check with Kath who else turned up for the class.
6. Need to observe for the next few lessons when it gets back to the agreed timetable

Figure 8.19 Field Notes Entry on 19.02.2004 (Page 3)

8.5.1 A Sample of Field Notes Entries: Project 2

Date: 12/01/05 (Wednesday)

[A] Running Descriptive Observation
Final Presentation

1. Space – Rm 304.

2. Actors – Jo, Helen, Caroline, Steven, Pamela. Ben Warman and Will arrived later. Kath and Joyce

3. Activities – Focussed mainly on the type project, with the rest of the emphasis on the book covers.
4. Objects – Flash documents, sketchbooks, photoshop and illustrator files.

5. Acts
   a. Reviewing the brief
   As the final presentation is next week, Kath reviewed the project requirements to remind the students what they needed to hand. Students were reminded to create a dummy Amazon page for the type project. I explained how they should do it, by taking a screen-shot and linking it to their swf files. Jo and Caroline wanted some clarification on the A2 portfolio sheets regarding its content. Kath mentioned that it should include a brief explanation about the project, developmental sketches and the final design piece. Students were reminded to hand in their postcard projects if they have not done so already.

   Kath informed me that she has given Jo an extension due to her illness prior to Xmas. She will hand in her project on Monday the 24th. However, Kath and I will try to mark the projects on Wednesday the 19th, after the students' presentations.

   b. Personal Tutorial
   Pamela – Kath asked Pam to show me her photographs. She informed me that she was having problems in Photoshop, where it kept crashing. I suspected it was her file size and asked to check the Image size. It turns out that she has set her image size to 300 dots/cm rather than 300dot/inch. Once reset, her images were much smaller. Kath and I also suggested that she swap to InDesign to create her book covers. This will allow her more control over the print setting and type manipulation.

   Her photographs were well taken, however, I felt that the colours are too muted. She has in fact toned down the colours, not wanting it to look too bright. However, I suggested she try to brighten up a single colour or hue to make more of any impact. Her type was minimal and I think worked well with the images.

   Type project – she has not started storyboarding. We asked her to make a start of it now, and came back to talk to her at the end of the class. Later on, I went back to her to see if she had any ideas on it. She did not have anything concrete yet and was struggling to use type only to portray her ideas. I suggested looking at everyday text that we pass by without noticing like advertising boards, street signs and shop signs. I clarified that text from outside the books can be used as an addition to deliver the message. Pam assumed that the entire 150 words must all come from the book.

Figure 8.20 Field Notes Entry on 12.11.2004 (Page 1)

8.5.1 A Sample of Field Notes Entries: Project 2

At this point, after our tutorial with Pam, Ben was asking why the type in his flash project did not render correctly in his SWF file. Everyone seemed puzzled, including myself, as I never encountered this problem before. As I was trying to help him solve his problem, Kath decided to see what Steven has come up with. Steven mentioned it was not crucial for me to see his work, as I have already seen his progress from the last 2 days. Hence I went to help Ben. Kath joined me shortly.

Ben Warman – His first type project was presenting the idea of written chemical formulae on a blackboard. It will appear and disappear leaving a trace of chalk mark. Users selecting chemical formula will be shown an excerpt of the text.

2nd type project – Ben was surprised that he needed to create a second type project. Hearing this, Kath once again emphasised the need for the students to revisit the brief to ensure that they know what they have to hand in. Ben was also not aware of the sketchbook requirements. Kath and I were amazed that he has never shown anything to us in sketches – though thinking about this I seemed to remember some paper sketches that he has shown me before. When asked how he would develop his idea without the need to sketch or draw, he claimed that he works out his design process in his head. Kath was not convinced that this was the best way to develop an idea and expressed disbelief.

Book covers – Kath asked Ben to show his latest progress on the book covers. Kath suggested trying replacing the black with other more acid like colours. He was asked to try replacing the black with different colours. Later on, he showed us his colour experiments and we really liked the way he has made the block colour transparent, with the image showing through. Ben then suggested using the spectrum colour of a litmus test to use for the book cover colour choice. Kath thought that this device could have the potential to be transferred into the 2nd type project. All of us concur that it was an interesting idea and that Ben should pursue it.

Jo – As Jo missed out on a lot of tutorials, Kath asked her to start by first showing us her 3 concepts. Her 1st concept was to use the effect of layering of illustration and texture. Her 2nd concept was typographic and hinged on the idea of 'forgetting' by using faded text. Her final concept concentrated on the idea of shadows and light effects. She showed us photographs she took of her flatmate using a dark and light effect. It projected a very melancholy feel to the imagery, which I felt was a perfect to described Kundera. Kath liked her type concept and thought that she could combine the two together. I suggested inserting the photograph into the type design layout to judge if the idea works. I too liked her usage of type and it seemed to work well with her photographs. Kath and I both thought that this was the strongest idea and to pursue it. Kath reminded her not to forget about the spine and back design. We also discussed about the keyword used on the front cover and how it does not need to be derived from the title. The graphic treatment of it (faded out) does not need to be similar, although I felt that having the same graphic treatment was fine.

Type project – she has not really started on the type project, but I saw that she was working on a Flash file, I asked her about it. She had not storyboarded but has started creating a simple animation of keywords picked out from the books.

Helen – Before showing her type project, Kath asked her to refresh our memory by showing us her book covers. She has refined her book covers, by only having the jigsaw pieces on the front cover, and having the title and excerpt on the inside flap. Apart from a few inconsistencies in scale and layout, her covers looked to be complete.

She presented the first of her two type projects – It contains two parts – first a puzzle and the second a screen where users have to click and follow the instructions to read the text. There was some incidental text on her first part, which referred to the time taken to complete the puzzle. Kath thought that this should be taken out if it does not serve any

Figure 8.21 Field Notes Entry on 12.11.2004 (Page 2)

8.5.1 A Sample of Field Notes Entries: Project 2

purpose. Helen seemed to have left it there because it was on the original flash example files she downloaded from FlashKit.

2nd type project - she showed her introduction screen consisting on silhouettes of a woman figure. This figure represents an elusive female character in the book. There are in total, 4 figures. Selecting each figure will bring up an excerpt of text. Kath picked up on text appearing on the side of the figures – seemingly to give instructions. We both felt that it would be better to take it our completely as this would allow the user to explore rather than be told what to do. I suggested instead of the phrase "Look for 'character name' ", it could be altered to say "Where is 'Lola?" Less instructional, more exploratory. Kath was uncertain of the usage of graphic outlines of the figures. She thought this could be replaced by text. Taking her cue, I suggested that Helen used text to create the silhouette shapes, as she did with her book covers. This will tie in nicely with her book covers. I also thought that her figures seemed to dominant and needed to be toned down, in terms of colour and line thickness.

Caroline – Did not have her book covers to show. Presented her 1st type idea. It consisted of several a series of screens where users will click on the shadows to reveal the text behind the shadows. She has altered the scale and angle of the shadows, due to the monotony of her first version. Kath has suggested she introduce more variety in her screens. I suggested using perspective and footsteps sound to create an atmosphere of walking down a dark alleyway.

She did not show her 2nd type project, but claimed to know how to create it.

Will – Initially did not want to present anything, but I joined him later one. Kath went out of the studio to fetch her Flash manual. He wanted to know how to create a button script. I proceeded to show him how to create a button script. He described how he wanted the movie to run; with text remaining on the bottom of the page after the user has selected each bullet (button). I suggested the best way to do this was to set the transparency level of each work to 0 at the start of the movie. Once the button has been selected, the transparency level of the word can be set to 100. I suspect that he still did not trust my solution and wanted to email Trevor for help. However, he requested my email address in case he could not get hold of Trevor. He did not show his 2nd type project.

Kath and I went to the staff room to have our usual post-class discussion. She felt that it was quite a positive session today, and the students have shown some progress. We went through the list of students whom we saw today. Steven – Kath seemed to think that he is on the road to finishing and its just a matter of him completing the type project. Ben – showed the most progression from his last designs. And according to Kath, his best work so far in the year. She thinks he still suffers from poor judgement. Initially, he was dismissive of the colour idea but has now warmed to it after being told to experiment. Pam – nice photos. Caroline improved her type from yesterday and at least she takes on board the advice from the tutors. Jo seemed comfortable with Flash and have a set direction for her concepts.

6. Events – 9th class
7. Time – from 9pm –12.20pm. Finished late, due to long critique session.
8. Goals – Students – To present type project and get feedback. Tutors – to facilitate session.
9. Feelings
   Students
   Just went about their own way – not anxious about any problems, except for maybe Pam, but she is always a bit anxious anyway.

Figure 8.22 Field Notes Entry on 12.11.2004 (Page 3)

8.5.1 A Sample of Field Notes Entries: Project 2

Tutors
We both were quite surprise at the progressed shown by the students. I guess we felt that having heard nothing for 3 weeks, we will be presented with completely different ideas and designs. However, Kath is concerned about Ben Saunders, Adam Speak and Matt. She has not seen any of their design development for some time. If Steven was unable to get in touch with Ben S, she will have to intervene by talking to him about his lack or progress.

[B] Recalls of forgotten material

[C] Interpretive Ideas

Participant Observer
Something struck me yesterday, I seemed to be less focussed on my role as a participant observer and taken a more active role in tutorials. Perhaps I feel more comfortable of my presence and my working relationship with Kath. Or perhaps I'm more comfortable with the teaching setting. It would be interesting to note how conscious I am with the Graphic Design tutor and students.

Screen and Print
Students spent much more time refining the book covers. Is this because they lack experience in print, and **want** to spend time on it or because of their inexperience **have** to spend more time to achieve the standard where is it acceptable? And do they assume, having done interactive projects, view the type projects as simpler to execute?

[D] Personal Impression and Feelings

Type projects
While I was disappointed in their stage of completion, I sense that the students were confident they were able to complete their projects in time. However, all except Helen and Steven have not started on the 2nd type project, and I hope it will not be the weaker project. While I think it helped to have a separate deadline for the book covers, students are generally still spending less time developing their type project. Until I review their final pieces, it is difficult to judge if the average ratio time spent this year was more than last year.

Progression
Both Kath and I were not disappointed with the students' works. We both felt that the type projects are finally beginning to take shape and the book covers are being refined to a higher standard. However, the missing students are a worry and we fear that without contact time, their projects will be weak and unfinished. Perhaps this is the first session where Kath and I did not feel we had to pushed the students. Saying that, their type project is far from being finished and the next couple of days will be crucial to see if they can complete their type project to the standard of their book covers. We are probably more confident on the students' progress than we were before the Xmas break.

Photoshop
I am surprised to discover that almost everyone is using Photoshop to layout his or her book covers. Both Kath and I have asked students to convert to using InDesign. This over-reliance on Photoshop is probably indicative of their poor understanding and experience of print techniques.

Figure 8.23 Field Notes Entry on 12.11.2004 (Page 4)

8.5.1 A Sample of Field Notes Entries: Project 3

Date: 24/02/05 (Thursday)

[A] Running Descriptive Observation
1st Lesson
3rd Lesson

1. Space – Henderson Suite and later – in the tutorial session of the GD studio (partition off from the main area)
2. Actors – Lecture – most students, tutorial – 5 students (?, Sue, Claire, Dimitrious, Samantha Clark)
3. Activities – Lecture and joint tutorials (mainly as an observer)
4. Objects – Slides (lecture) and developmental sketches, mood boards, digital files, illustrations (tutorials)
5. Acts

   a. *Catch up with Ted*
   Ted was finally present for this class, as he has been away for 3 days. He asked how the lectures went. I replied it went well, except that I had some technical difficulties on the first day with Citrix. I told him that I was surprise at a good attendance level. He got some feedback from the students, and while they found the lectures useful, some were disappointed that I did not show them how to create interactive content. They expected them to be more technical rather than theoretical. But Ted reiterated to them that my lectures were not supposed to be technical and mentioned to them at the beginning of the class. I offered Ted my time to help with the technical requirements of the students. I also mentioned to Ted that I did not run any exercises with them because of his concerns about distractions and the time needed to complete them. This was the right decision, as Ted found out that the students were apparently still working on another project from last semester for Steve's class.

   The students have handed in their developmental sketches and storyboard to him in the morning. He will have personal tutorials this afternoon. He said I was welcome to join him when I can. I said that I would attend for at least an hour in the afternoon. I asked if the students were aware that I am available for tutorial, he said no. He did not make that explicit in the timetable. Hence I made the point at the beginning of the lecture to address this 2 points:
   1. Lectures are not technical but if students needed help, they can ask me.
   2. I am available for tutorials; they can either grab me or email me. (I will need to let them know my email address at the end of the next lecture)

   b. Interactivity Lecture
   Prior to the lecture, I reiterated the 2 points made above. I then gave out the lecture notes and asked them to fill in an attendance sheet.

Figure 8.24 Field Notes Entry on 24.02.2005 (Page 1)

8.5.1 A Sample of Field Notes Entries: Project 3

c. Student Tutorial
First student (BBC guy)
I walked in midway into the tutorial with this student. He was in the midst of showing Ted his Flash file experiment. He had already discuss and gone through his sketches with Ted before I arrive. Ted's commented on his lack of detailed storyboard. He is not satisfied with having only verbal description of the storyline. Ted cautioned the student of going straight to the computer without having gone through the proper process of visual sketching and experimentation. Apparently the student has a reputation for this method. Ted is worried that if he is not shown any descriptive visuals, it will be too late to change or help him in the 2nd and 3rd week. The student acknowledge that this was true and it is due to him having worked as a freelancer before and he now wants to develop this part of this design skill. Ted and I both suggested different methods of sketching, rather than using pencil and paper; he can do video and photography sketching. Ted summed up that he needed to improve his visual communicating skills. He was happy with his concept. He also stressed that he shouldn't put too much effort into the website, he should instead concentrate on the trailer.

Sue Hornsby
She selected the Art house option. She presented about a few A3 sketches of the storyboard – drawn and coloured in. She discussed about the choice of fonts, not wanting it to look like a Tim Burton movie (referring to a sketch she had). She was aware of the difference in style and wanted to use a more 'Anglo Saxon' typeface. She also wanted to use Celtic symbols to preclude the typography. The typography will weave in and out of the trees. The discussion mainly centred on the various techniques of animating the text. She also expressed concern about not knowing Flash and DW. She was unsure of either using this project to learn Flash or use her known skills to create a portfolio piece. She was also worried about the time length of the project; she felt it is a lot to finish in 3 weeks. She wanted clarification on the project delivery and Ted confirmed that it could be handed in at the end of the semester.

Claire
She selected the Art house option. She presented detailed storyboards in colour. She showed lots of developmental sketches. She wanted her concept to be a lot truer to the original story. Her main visual motif will be typography morphing into different shapes. She was influenced by Why Not's associate use of fill-in counters in their typeface 'Apocalypse'. She proceeded to show an example of the typeface. It reminded her of a brutal and harsh period. She was slightly confused of the Art house theme and wanted a clearer definition. Ted described it as any non-mainstream movie. She felt it was 'quite a daunting project' due to the technical requirements of the projects. She expressed her inexperience of the software needed to create interactive projects. Ted felt that her framing, camera angle and composition to be quite static. He wanted her to incorporate some variety into her storyline. She needed to have more detailed sketches on the sequencing of her trailer. She also presented some sketches on the look of the website. She is using an open book metaphor for her web page. Ted questioned 'if the journey of the intro is worth the effort'. He wanted to make sure time was not wasted on a sequence that does not add anything to the experience of the piece. The student diverted from this project to discuss the marks of her last project.

Dimitrious
He also selected the Art house option. He presented the most research material. He first explained that he had to get the story translated in order understand it (as he was Greek). He showed research into ideograms, phonograms of Anglo Saxon's influence. He also researched into Celtic and Anglo-Saxon symbols and even experimented creating his own Runic font. He presented colour printouts of movie posters and film title sequences that he liked. Also extracted examples from the 'Motion Graphic' book. He presented 2 design styles for his website. The first option used a Blackletter typeface, giving the impression of the wrong time frame of the story. While his second option was better in keeping with the time frame, using Runic like letterforms. However, the combinations of the letters may not be entirely legible and Ted cautioned against this. Dimitrious was encouraged to adapt an

Figure 8.25 Field Notes Entry on 24.02.2005 (Page 2)

8.5.1 A Sample of Field Notes Entries: Project 3

existing typeface to create a more legible typeface. The use of ideogram as buttons may be too cryptic to understand. He showed his storyboard on a series of index card. He wanted to use the thin stroke line of the runic form to create different imagery derived from the storyline. While Ted like this idea, he questioned him on when it stops begin typographic and when it starts being illustrative. Dimitrous next step should be to try to experiment with different ways to create the letterform, using different medium and inscription tool. He was concerned about the short time period given for such a complex task. Ted suggested him to spend 2 days on trying this out before developing a more detailed plan of the project by next week.

Samantha Clark
She chose to design for the 8-14 year old audiences. She showed three A4 illustration of a dragon in different scenes and two A4 sheet with non-descriptive storyboards. Ted questioned if she has thought about the branding of the website, there should be a logo identifying the movie and merchandise. There wasn't any thought into composing the design as a website or a trailer. She seemed confused about the need for branding and the idea of a structured navigation. She wanted to have an explorative feel, with buttons being placed within the drawings. Ted was not sure about her chosen illustrative style – it refers to too much like a Disney style and questioned of using well-known examples of visual expectation of a 'dragon'. She also needed to produce a much more detailed storyboard. It seemed that she wants to include too much of the story into a 30s trailer. Ted tried to explain the need for pace, sound and movement by showing the Halo3 games trailer. We proceeded to have a discussion on different forms of fictional monsters such as Pokemon and Miyazaki creatures. Ted wanted a more original character. He was unsure if her style and character would attract her audience. The storyline also needed to be adapted to appeal to kids.

6. Events – 3rd class

7. Time – Lecture from 12.15pm-1pm. Attended tutorials from 4.15 to 6.30pm.

8. Goals – Delivering the lectures and observing and occasionally offering comments in tutorials. Observation –
    a. To find out about the quality of concept presented
    b. How did the students develop their concepts?
    c. What visual sketching did they do?
    d. What were their level of breath and depth of their research?
    e. How confident were they with their ability?
    f. What were their technical abilities?
    g. What were their approaches to the project?
    h. What were their design processes?
    i. How did they formulate the problem?
    j. How did they interpret the brief?
    k. What were their concerns?

9. Feelings - students
    Lectures – same as before – paid attention but no questions.
    Tutorials – looking for direction, seeking Ted's comments on their idea.

[B] Recalls of forgotten material
N/A

Figure 8.26 Field Notes Entry on 24.02.2005 (Page 3)

8.5.1 A Sample of Field Notes Entries: Project 3

[C] Interpretive Ideas

Tutorials
Form the 5 students I have sat in, I was generally impressed by:

1. **Depth and quality of research:** The level of research conducted for their concept development
2. **References:** The references made by students of designers, movies, typefaces, literature and other cultural influences in their work. They obviously have a wider vocabulary of cultural references and are aware of design influences.
3. **Sketches**: The quantity and quality of the sketches and storyboards. Some were very detailed and in colour. They obviously have good drawing ability.
4. **Project balance**: All but one showed ideas for both the trailer and website, indicating that they do not view both components as separate and are developing both concurrently.

However, there were a few similar problems to the MM in terms of their approach and questions regarding their projects:

1. **Computer dependency:** One student had the tendency to not produce any sketches and to go straight to the computer. He had good computer skills but was not good at communicating his ideas visually prior to production.
2. **Technical requirements:** Wary (and some fear) of technical requirements. Most students have not had any experiences with Flash or Dreamweaver, and most questions were about 'how to create it' and which program to use.
3. **Non-typographic solution:** Usage of imagery to deliver the expressive and conceptual idea across. Even though it is meant to be 80% type – students were using images rather than the words as their main communicative element. Type is thought of only in the genre of content and meaning (Dimitrious was the only one toying with the idea of form, using Runic letterform to create new words and decorative symbols).

A unique problem:

1. **Print model:** Some students were coming up with concepts and visual layout based on a print model. For e.g. Claire's and Sam's storyboards – very static, fixed camera angle and movement of text based on a print reading model.
2. **Time frame and quantity of work:** A few students were worried that the 3 weeks is too short for this project – because of the amount of animation or interactivity involved.

Figure 8.27 Field Notes Entry on 24.02.2005 (Page 4)

8.5.1 A Sample of Field Notes Entries: Project 3

[D] Personal Impression and Feelings

Lecture
The lecture went well, probably the smoothest and most confident in my delivery.

Ted's Presence
However, concerned that Ted did not attend my lecture. He obviously did not feel the need to be present and to know what I am delivering. I would have liked him to sit in, in order for him to judge if what I presented were relevant and useful to the students. This will have an impact on the tutor's questionnaire – he will not be able to rate the relevance of the lectures and its subject matter. But I think I can still ask him about it.

Tutorials
Research and sketching
I was generally impressed by the level and amount of work put into the concept development, mainly at the research stage taken and the quantity of sketching produced. It seems that the students actually went to the library to pull out design and movie references. Many of them researched into the Anglo Saxon literature, symbols and visual style of the period. And some wanted to use Celtic symbols. They seemed to have a much more formal design process in place.

Competent ideas but no outstanding one
Although of the 5 students I saw, none really stood out in having a really interesting conceptual idea. Most were pretty standard approaches and I did not feel that they have pushed their ideas too far.

Secondary Tutor
Felt that I took a more backseat role than with Kath. Maybe to do with the first time I have worked with Ted in this context and to the fact that he was a good tutor and I really could not add to his comments.

[E] Reminder to look out for additional info

1. To advertise my email address at the end of the lecture.

Figure 8.28 Field Notes Entry on 24.02.2005 (Page 5)

8.5.2 A Sample of Reflective Diary Entries

Action Research Project 1: Student Learning Project
Daily Diary

Date: 22/03/04

Account
Today: Went upstairs to the staff room to finalise the marks for the students. Kath and I went through the marks again and went through the design document. Looked at Komo's work, which he handed in late. I then copied the student's submission onto my hard disk. I will get the final marks from Kath on Wednesday. Kath has not finished her evaluation form and have promised to finish it by the end of the week. She also did not hand over the form to Helen. She will do that when Helen hands in her project.

Reflections
We looked at the marks given on Friday. Although we marked it when we were irritated and tired after the presentation, I think it was pretty spot on. Today, we had a look at the students' design document. We gave it a separate mark. On the whole, we came to the conclusion:

1. Most of the students tend to use the document as a 'box filling' exercise and not really use it to develop their process in thinking.
2. Most students have good concepts, but there is a gap missing between concept and development and execution. There was hardly any experimental process going on during the design development.
3. Some students showed plenty of research and put in references and inspiration. However this was not reflected in their final piece. Even if they did use some of the research, there is hardly any contextualising of the work they reference. For e.g. Paul and Alan's work uses Muller-Brockman's work because they like the style but did not try to understand the context in which it was created.
4. Kath mentioned we would need to have a review session in order to bring up issues and things to improve the next time the class is run. I said that I would bring in my own notes to add into this process. I feel that my ethnographic description will be useful for this process.
5. All but a few have put in any form of research into the typographic project.

A few things that Kath might want to change when the next class is run:

1. To pick authors early, in order to read them first. Then it helps to guide the students
2. To pick more contemporary authors.
3. To give marks on experimentation with materials and layout.

According to Jamie and Kath, for a first time class, the quality of the projects was generally good. Kath acknowledge that the type project was definitely the weaker of the two, but maybe it's because there weren't any existing examples. Both Jamie and Kath felt it was a project for the 1st semester, because it brought out the holes in their design process. That way, they would have semester 2 to plug those holes up.

Actions

1. Collect final marks from Kath
2. Collect the evaluation form from Kath
3. Decide on when to ask for the interview. Maybe use the review session as an opportunity.

Figure 8.29 Diary Entry on 22.03.2004

8.5.2 A Sample of Reflective Diary Entries

Action Research Project **2 & 3**: Student Learning Project
Daily Diary

Date: 28/10/04

Account
Meeting with Kath to discuss the AR project. She mentioned during our telephone conversation yesterday that she had gotten positive feedback from the 2nd year about the type project. They asked if I was going to run it with the 2nd years this year.

We discuss what we will be changing and keeping for this year.

1. 5 weeks instead of 6 – due to scheduling and them worried that the 2nd year do not have enough time to finish their projects for the current classes.
2. 2 hours instead of 3 hours of contact time.
3. Wednesday and Thursday sessions, 9-11am.
4. Shorten period has brought up problems of scheduling and it means having to deliver the lectures every week, instead of trying to spread it out.
5. No exercises – as I think it would be asking for too much
6. Finished book jackets before they go off for Xmas. Storyboard for type project.
7. Changing authors to Milan Kundera, Irvine Welsh, Martin Amis, Italo Calvino, Orhan Pamuk.
8. I will be asking them to choose or use my given text for the type project.
9. Resources will be put onto UNNERVE as well as Blackboard.
10. I will elaborate more on type lecture. Current 2nd year did not have any formal type classes. It seems that the new 1st years will have more type projects and teaching from Jamie.

Reflections
Not very pleased about the shortening of time from 6-5 weeks. Even less time to work with the students. Also. Less contact time. The xmas break is at a disruptive stage. Trying to implement the cut-off date for the book cover is also rather difficult seeing that we have a 3-week xmas break before they come back to their final week. However, I don't see much choice. I did not take the chance to ask specifically why the class was shortened. Where they expressing concern about the skill and commitment level of the student? If so, why did they decide to shorten the 2nd part of the semester and not try to make it up later?

5 weeks is hardly enough time for them to think, absorb and produce high quality work.

Actions

1. To revise presentations – particularly the type one. How to incorporate the type taxonomy
2. To revise brief – chosen text of books.
3.

Objective for the next class

N/A

Figure 8.30 Diary Entry on 28.10.2004

8.5.2 A Sample of Reflective Diary Entries

Action Research Project **2 & 3**: Student Learning Project
Daily Diary

Date: 13/12/04

Account
I am analysing the interviews with GD tutors to identify current issues and problems faced by the GD staff and course. I started to realise that I have not been reinforcing the 4 type themes in our tutorial. I have not been asking how if the students' ideas are interpreted using one of the themes. I believe this strategy will help them apply typography with a specific focus in mind.

Reflections
I believe this slip was cause by two reasons:

1. I was too caught up in Kath's agenda regarding the students' incomplete design process. I have been pre-occupied with this teaching objective than with my own project objective. Perhaps this reveals how essential it is to have a complete design process in place, as it is hard to assess or even progress other areas of design skills without it.
2. I simply forgot to reinforce these 4 themes, focusing instead on developing the conceptual ideas presented by the students. About 80% of the concept development discussions have been focused once again on the book covers, rather than the type. This provided me with a lack of opportunity to develop their type project further.

Actions

1. In the next tutorial, I will need to consciously inquire and emphasise the 4 themes in the students' storyboards presentation.
2. I am thinking of giving them a printout or a webpage containing a summary of those 4 themes with some examples.
3. I will have to think carefully on how to tackle this issue in my GD project. Is it the main emphasis in the teaching objectives?

Post diary entry response (17/12/94):

1. I did eventually complete a leaflet summarising the key points in each lecture and to use the opportunity to reemphasis the 4 type themes.
2. Although, I must admit, I did not get a chance to really emphasis the 4 approaches.

Figure 8.31 Diary Entry on 13.12.2004

8.5.2 A Sample of Reflective Diary Entries

Action Research Project **2 & 3**: Student Learning Project
Daily Diary

Date: 14/1/05

Account
Had a quick phone conversation with Ted. This is the account of it:

1. Discussed about the schedules of the lectures. Ted mentioned ideally it should be put in for Monday, Thursday or Friday. These are the days where Debbie will be in. I was fine with this arrangement.
2. To stagger the delivery of the lectures – 2 per week.
3. I enquired when and how long I needed to be involved in tutorial times. Ted said that the tutorials would start 2 days after the brief has been given.
4. Ted will cc me on the schedule and brief for this class.

Reflections

1. The structure of the GD classes is very different from MM. The overall length of time is shorter from 5 to 3 weeks. However, the contact time with the tutors are quite intense and over a continuous period. I am not sure, but I think they do not have any other modules at this time. All the attention is focused on a singular project.
2. I will have to see how to be involved in the tutorials, as the system of joint tutorials with the main tutor will not be possible. According to Ted, the tutorials will run throughout the day, so I will need to set up a time to be in the studio to see students on an individual basis, specifically to do with the project. If there is a group of students chosen to pursue a typographic solution, I could possibly set a time to see that group of students with Ted. I'll have to wait and see. A lot of unknown in this project – high risk.

Actions

1. Revise the presentations for the GD – maybe only changing the title
2. Revise the issues of comparisons.

Figure 8.32 Diary Entry on 14.01.2005

8.5.2 A Sample of Reflective Diary Entries

Action Research Project **2 & 3**: Student Learning Project
Daily Diary

Date: 18/2/05

Account
Had a phone conversation with Ted. This is the account of it:

1. Discussed the brief and schedule of the project with Ted. He thought it was still a good idea to deliver all four lectures in one week, as they are only about 30mins long. The students are used to sitting through 1 hours lectures.
2. Mini-project – he was concern that they might distract the students away from their main project and if they take up a lot of time, students may want to know how they will be assessed. Although he did think it was beneficial to the students. I said I would rethink about it and decide by today.
3. I told him if I were to deliver the lectures, I would not have time for crits till the 2nd week. He was fine with this arrangement.
4. Ted will be away from Mon-Wed next week. He will inform Steve that I might need some help setting the lectures up. Steve will be around to help me out if needed.
5. The GD program does not use Blackboard. I have suggested to put the lectures up on the back of the CfDR website. Or maybe mine.

Reflections

1. Still not sure if delivering the lectures in one week is a good idea, but Ted seem to want to push this. He wanted the 2nd week and 3rd week for the students to start their project. His thinking is that if you feed the students all the materials in the 1st week, this will give them plenty of ideas when they start thinking about their concepts. To a certain extent I agree, but I think the lectures are quite dense, and the danger is that the students will forget about it.
2. I will need to make a decision on the exercises. I understand Ted's concern and have to weigh the advantages and disadvantages up. I think it's a luxury to run it, but it will aid comprehension and absorption. However, I think the exercises I prepared earlier this week may not be suitable. I think each exercise needs to be related to each lecture and not only focus on the typographic side. If not, it is starting to feel like a purely typographic class. And it should only take 1 hour not 3 to get done. So short – can it be done?

Actions

1. Add url to the slides.
2. Upload slides on to the website.
3. Rethink about exerciser.
4. Put url onto the leaflet.
5. Print slides?
6. Try out the live connection upstairs. (Might need to bring my laptop next week)

Figure 8.33 Diary Entry on 18.02.2005

8.5.3 Module Evaluation Questionnaires: Sample

PROJECT EVALUATION (Student's Version)

DE788 TYPE PROMO PROJECT

SECTION A Overall Module Assessment

	Please select your answers by ticking in the boxes provided.	Very Good	Good	Fair	Poor	Very Poor
1	The module as a whole was:	☐	☐	☐	☐	☐
2	The module content was:	☐	☐	☐	☐	☐
3	The second instructor's (Joyce) contribution to the module was:	☐	☐	☐	☐	☐
4	The second instructor's (Joyce) effectiveness in teaching the subject matter was:	☐	☐	☐	☐	☐

SECTION B Relative to Other Modules

	These questions ask you to rate the items below in relation to other Year 2 modules.	Much Higher	High	Average	Low	Much Lower
5	The intellectual challenge presented was:	☐	☐	☐	☐	☐
6	The level of work you put into this module was:	☐	☐	☐	☐	☐
7	The level of work to succeed in this module was:	☐	☐	☐	☐	☐
8	Your involvement in this module (doing assignments, attending classes, etc) was:	☐	☐	☐	☐	☐
9	The pace of the module was:	☐	☐	☐	☐	☐

SECTION C About the Interactive Type Project

	These questions are specifically about the interactive type project conducted in this module.	Very Much	Quite	Somewhat	Not Really	Not at All
10	How well was the interactive type project integrated into the module?	☐	☐	☐	☐	☐
11	How well was the interactive type project designed to fit module goals?	☐	☐	☐	☐	☐
12	How challenging was the interactive type project?	☐	☐	☐	☐	☐
13	How clear was the brief for the interactive type project?	☐	☐	☐	☐	☐
14	Was the time given to complete this interactive type project sufficient?	☐	☐	☐	☐	☐
15	How difficult was it to be creative without the use of images in the interactive type project?	☐	☐	☐	☐	☐
16	How challenging did you find the interactive type project compared to the book jackets project?	☐	☐	☐	☐	☐
17	Were the course materials (notes and references) given for the interactive type project ***adequate*** for the project requirements?	☐	☐	☐	☐	☐
18	Were the course materials (notes and references) given for the interactive type project ***relevant*** for the project requirements?	☐	☐	☐	☐	☐

Please turn over

1/4

Figure 8.34 Module Evaluation Questionnaire (Page 1)

8.5.3 Student Evaluation Form: Sample

PROJECT EVALUATION (Student's Version)

DE788 TYPE PROMO PROJECT

SECTION C About the Interactive Type Project

	Please select your answers by ticking in the boxes provided.	Very Much	Quite	Somewhat	Not Really	Not at All
19	Were the four lectures (type, hypertext, time-based and interactive media) delivered for the interactive type project ***relevant to the development of your interactive type project?***	☐	☐	☐	☐	☐
20	Were the four lectures (type, hypertext, time-based and interactive media) delivered for the interactive type project ***relevant to your overall knowledge of multimedia design?***	☐	☐	☐	☐	☐
21	Were these lectures delivered in a clear, coherent and interesting manner?	☐	☐	☐	☐	☐
22	How difficult was it to understand the lectures?	☐	☐	☐	☐	☐
23	Were there sufficient visual examples used in the lectures?	☐	☐	☐	☐	☐
24	Was too much time devoted to lectures?	☐	☐	☐	☐	☐

25 Rank the relevance of the four lectures towards the ***development of your interactive type project.*** *(Rank them from 1- 4, where 1=most relevant, 4=least relevant. Use each rank only once)*

	Typography Lecture		Time-Based Medium Lecture
	Hypertext Medium Lecture		Interactive Medium Lecture

26 Based on your answer in question 25, why did you find your top-ranked lecture most relevant for the ***development of your interactive type project***? *(Select as many as required)*

- ☐ Introduced new ideas
- ☐ Relevance to the module
- ☐ Relevance to the course
- ☐ Broaden design approach
- ☐ Increased level of design skills
- ☐ Increased awareness of new media principles
- ☐ Increased knowledge of typography
- ☐ Introduced cross-media application of typography
- ☐ *Others* .....

27 Rank the relevance of the four lectures towards the ***development of your overall knowledge of multimedia design.*** *(Rank them from 1- 4, where 1=most relevant, 4=least relevant. Use each rank only once)*

	Typography Lecture		Time-Based Medium Lecture
	Hypertext Medium Lecture		Interactive Medium Lecture

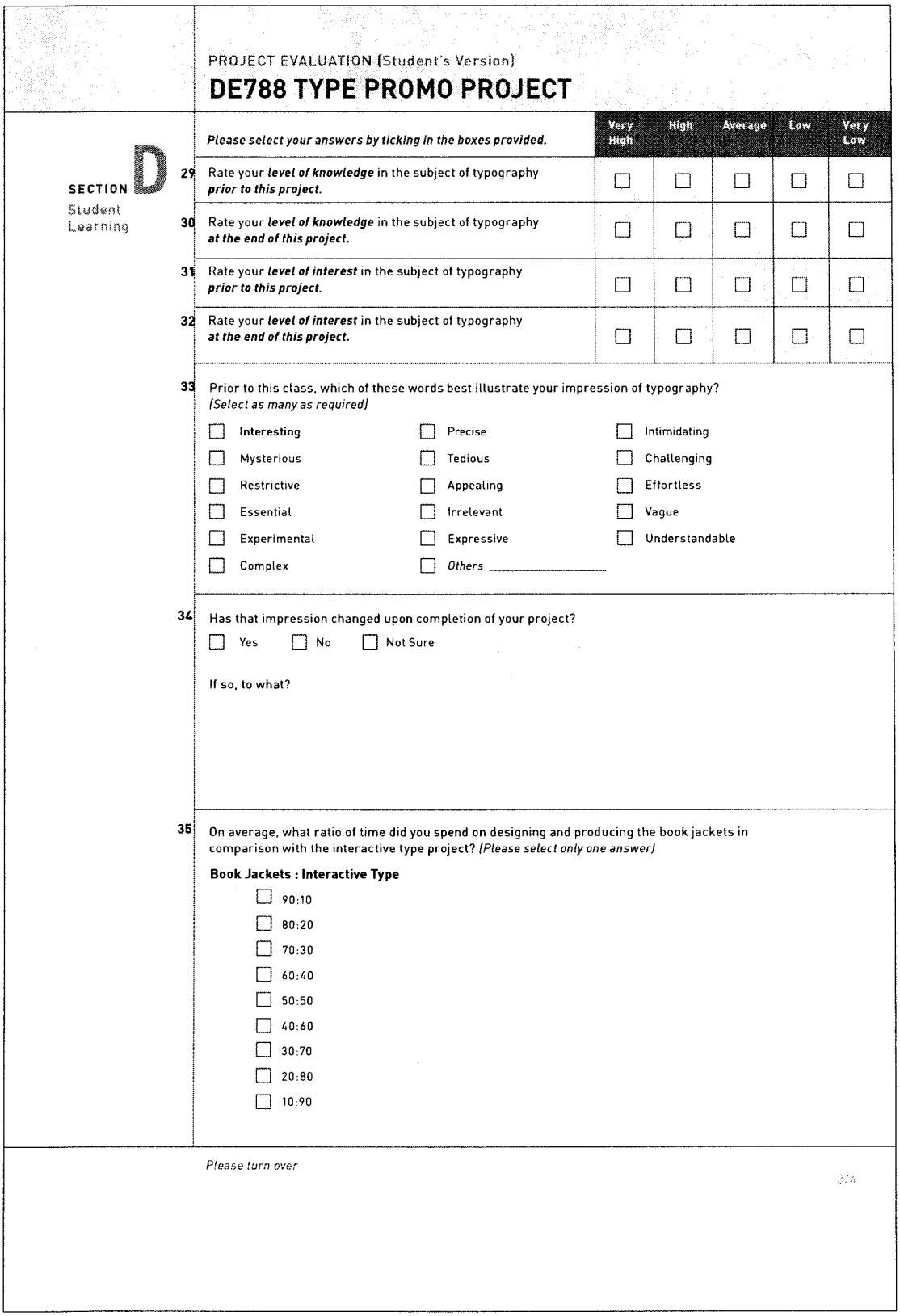
28 Based on your answer in question 27, why did you find your top-ranked lecture most relevant for the ***development of your overall knowledge of multimedia design***? *(Select as many as required)*

- ☐ Introduced new ideas
- ☐ Relevance to the module
- ☐ Relevance to the course
- ☐ Broaden design approach
- ☐ Increased level of design skills
- ☐ Increased awareness of new media principles
- ☐ Increased knowledge of typography
- ☐ Introduced cross-media application of typography
- ☐ *Others* _____

Please turn over

Figure 8.35 Module Evaluation Questionnaire (Page 2)

8.5.3 Student Evaluation Form: Sample



PROJECT EVALUATION (Student's Version)

DE788 TYPE PROMO PROJECT

SECTION D
Student Learning

	Please select your answers by ticking in the boxes provided.	Very High	High	Average	Low	Very Low
29	Rate your ***level of knowledge*** in the subject of typography ***prior to this project.***	☐	☐	☐	☐	☐
30	Rate your ***level of knowledge*** in the subject of typography ***at the end of this project.***	☐	☐	☐	☐	☐
31	Rate your ***level of interest*** in the subject of typography ***prior to this project.***	☐	☐	☐	☐	☐
32	Rate your ***level of interest*** in the subject of typography ***at the end of this project.***	☐	☐	☐	☐	☐

33 Prior to this class, which of these words best illustrate your impression of typography? *(Select as many as required)*

☐ **Interesting**	☐ Precise	☐ Intimidating
☐ Mysterious	☐ Tedious	☐ Challenging
☐ Restrictive	☐ Appealing	☐ Effortless
☐ Essential	☐ Irrelevant	☐ Vague
☐ Experimental	☐ Expressive	☐ Understandable
☐ Complex	☐ *Others* _____	

34 Has that impression changed upon completion of your project?

☐ Yes ☐ No ☐ Not Sure

If so, to what?

35 On average, what ratio of time did you spend on designing and producing the book jackets in comparison with the interactive type project? *(Please select only one answer)*

Book Jackets : Interactive Type

☐ 90:10
☐ 80:20
☐ 70:30
☐ 60:40
☐ 50:50
☐ 40:60
☐ 30:70
☐ 20:80
☐ 10:90

Please turn over

Figure 8.36 Module Evaluation Questionnaire (Page 3)

8.5.3 Student Evaluation Form: Sample

PROJECT EVALUATION (Student's Version)

DE788 TYPE PROMO PROJECT

SECTION D
Student Learning

36 What aspects of the type project **contributed** most to your learning?
(Select as many as required)

- ☐ Lectures
- ☐ Tutorials
- ☐ Additional tutor
- ☐ Recommended reading list
- ☐ Technical requirements
- ☐ Interactive requirement
- ☐ Motion requirement
- ☐ Type focussed solution
- ☐ Linking concepts between the print and screen element
- ☐ Viewing past students' works
- ☐ Examples showing usage of type in other disciplines
- ☐ None
- ☐ *Others* _____

37 What aspects of the type project **detracted** from your learning?
(Select as many as required)

- ☐ Lectures
- ☐ Tutorials
- ☐ Additional tutor
- ☐ Recommended reading list
- ☐ Technical requirements
- ☐ Interactive requirement
- ☐ Motion requirement
- ☐ Type focussed solution
- ☐ Linking concepts between the print and screen element
- ☐ Viewing past students' works
- ☐ Examples showing usage of type in other disciplines
- ☐ None
- ☐ *Others* _____

38 Any other comments?

This is the end of the evaluation form. Thank you.

4/4

Figure 8.37 Module Evaluation Questionnaire (Page 4)

8.5.3 Student Evaluation Combined Results

Project Information	Action Research Project 1 (ARP 1)	Action Research Project 2 (ARP 2)	Action Research Project 3 (ARP 3)
Number of students	13	11	40
Number of forms collected	10	9	25
Students given extensions	2	1	0

Table 8.5. Project Information

Section A Questions	ARP 1 Mean Scores	ARP 2 Mean Scores	ARP 3 Mean Scores
1. The module as a whole was:	2.10	1.78	2.04
2. The module content was:	2.00	2.33	1.92
3. The second instructor's (Joyce) contribution to the module was:	1.90	2.00	1.40
4. The second instructor's (Joyce) effectiveness in teaching the subject matter was:	2.10	1.78	1.40
Legend- 1:Very Good | 2: Good | 3: Fair | 4: Poor | 5: Very Poor			

Table 8.6. Section A Results

Section B Questions	ARP 1 Mean Scores	ARP 2 Mean Scores	ARP 3 Mean Scores
5. The intellectual challenge presented was:	2.30	2.22	1.56
6. The level of work you put into this module was:	2.20	2.22	1.92
7. The level of work to succeed in this module was:	2.30	1.89	1.54
8. Your involvement in this module (doing assignments, attending classes, etc) was:	2.10	2.44	1.76
9. The pace of the module was:	2.50	2.22	1.64
Legend - 1:Much Higher | 2: High | 3: Average | 4: Low | 5: Much Lower			

Table 8.7. Section B Results

Section C Questions	ARP 1 Mean Scores	ARP 2 Mean Scores	ARP 3 Mean Scores
10. How well was the interactive type project integrated into the module?	2.90	1.89	N/A
11. How well was the interactive type project designed to fit module goals?	2.10	2.00	N/A
12. How challenging was the interactive type project?	1.60	1.44	N/A
13. How clear was the brief for the interactive type project?	2.90	2.00	N/A
14. Was the time given to complete this interactive type project sufficient?	2.20	2.44	N/A
15. How difficult was it to be creative without the use of images in the interactive type project?	2.20	2.00	N/A
16. How challenging did you find the interactive type project compared to the book jackets project?	2.20	1.56	N/A
17. Were the course materials (notes and references) given for the interactive type project adequate for the project requirements?	2.50	2.11	2.00
18. Were the course materials (notes and references) given for the interactive type project relevant for the project requirements?	2.30	2.00	1.96
19. Were the four lectures (type, hypertext, time-based and interactive media) delivered for the interactive type project relevant to the development of your interactive type project?	2.00	2.11	1.83
20. Were the four lectures (type, hypertext, time-based and interactive media) delivered for the interactive type project relevant to your overall knowledge of multimedia (or graphic) design?	2.11	1.89	1.52
21. Were these lectures delivered in a clear, coherent and interesting manner?	1.63	2.00	1.26
22. How difficult was it to understand the lectures?	3.22	3.00	4.09
23. Were there sufficient visual examples used in the lectures?	1.78	2.00	1.26
24. Was too much time devoted to lectures?	3.33	3.00	3.57
Legend - 1:Very Much | 2: Quite | 3: Somewhat | 4: Not really | 5: Not at all			

Table 8.8. Section C Results

Section C Questions 26. Rank the relevance of the four lectures towards the development of your interactive type project.					
	ARP 1 Mean Scores		**ARP 2 Mean Scores**		**ARP 3 Mean Scores**
Type	1.17	Type	1.60	Interactive	2.15
Interactive	2.00	Interactive	1.60	Hypertext	2.50
Time-Based	3.33	Hypertext	3.20	Type	2.55
Hypertext	3.50	Time-Based	3.60	Time-Based	2.80
Legend - 1:Most relevant | 4: Least relevant					

Table 8.9. Question 26 Results

Lecture Relevance Ranking for Type Project:

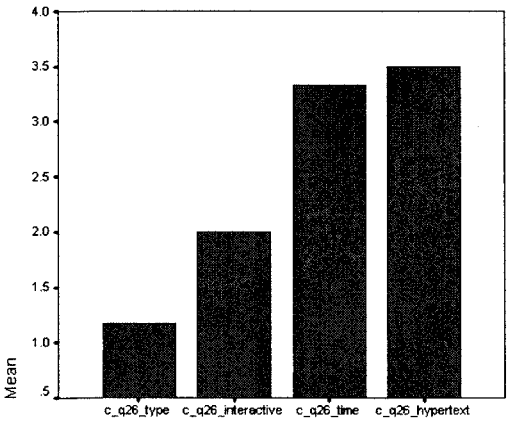


Figure 8.38. ARP 1 Lecture Ranking (type)

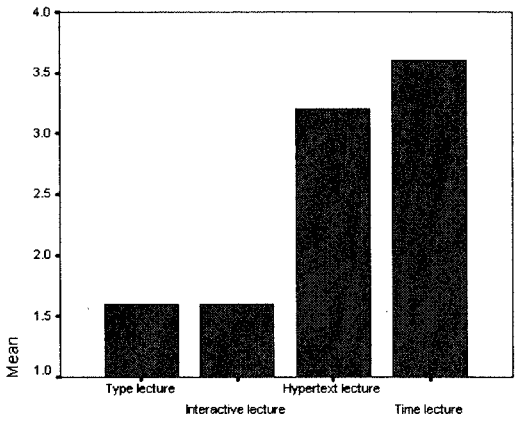


Figure 8.39. Arp 2 Lecture Ranking (type)

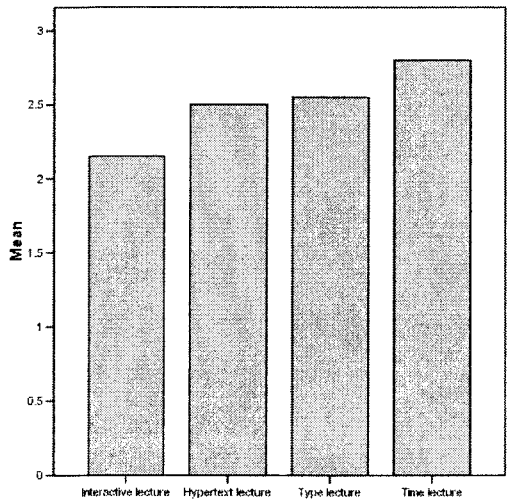


Figure 8.40. DE763 Lecture Ranking (type)

Section C Questions 28. Rank the relevance of the four lectures towards the development of your overall knowledge of multimedia or graphic design.					
	ARP 1 Mean Scores		**ARP 2 Mean Scores**		**ARP 3 Mean Scores**
Type	1.67	Type	1.67	Type	2.11
Interactive	1.83	Hypertext	2.11	Interactive	2.42
Hypertext	3.17	Time-Based	2.44	Hypertext	2.68
Time-Based	3.33	Interactive	2.67	Time-Based	2.79
Legend - 1:Most relevant | 4: Least relevant					

Table 8.10. Question 28 Results

Lecture Relevance Ranking for Multimedia & Graphic Design:

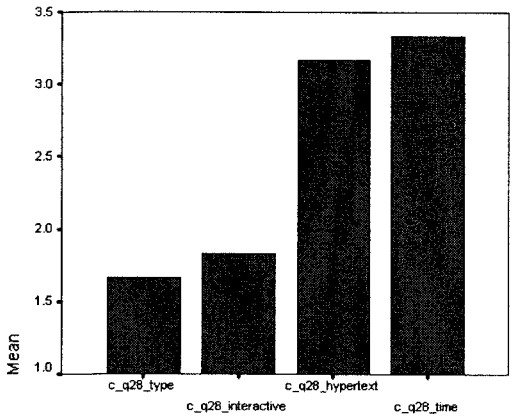


Figure 8.41. ARP 1 Lecture Ranking (subject knowledge)

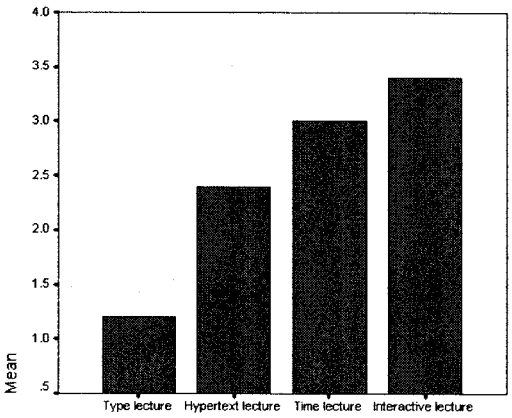


Figure 8.42. ARP 2 Lecture Ranking (subject knowledge)

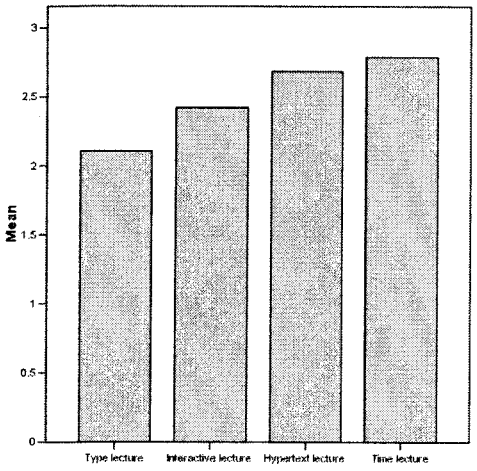


Figure 8.43. ARP 3 Lecture Ranking (subject knowledge)

Section C Questions 27. Based on your answer in question 26, what aspects of your top ranked lecture did you find most useful for the development of your project?			
	ARP 2 Percentage		**ARP 3 Percentage**
Increased level of design skills	55.6	Introduced new ideas	73.9
Increased awareness of new media principles	55.6	Relevance to module	73.9
Introduced new ideas	44.4	Increased awareness of new media principles	52.1
Increased knowledge of typography	44.4	Increased knowledge of typography	43.5
Relevance to module	44.4	Broaden design approach	39.1
Relevance to course	33.3	Introduced cross-media application of typography	32.0
Broaden design approach	33.3	Relevance to course	30.4
Introduced cross-media application of typography	11.1	Increased level of design skills	4.3
Others	0	Others	0
Legend: 1:Most relevant | 4: Least relevant			

Table 8.11. Question 27 Results

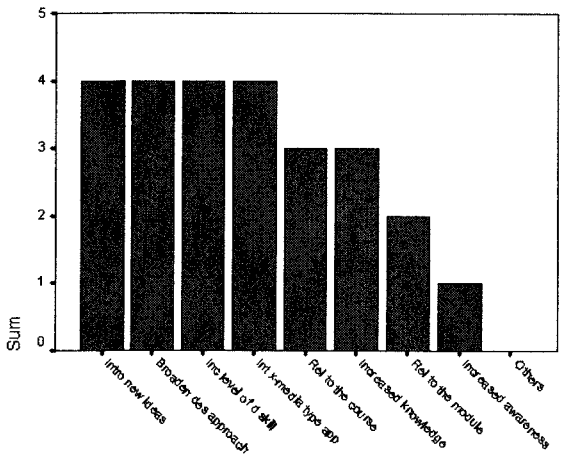


Figure 8.44. ARP 2 Uses of Lectures (Type Project)

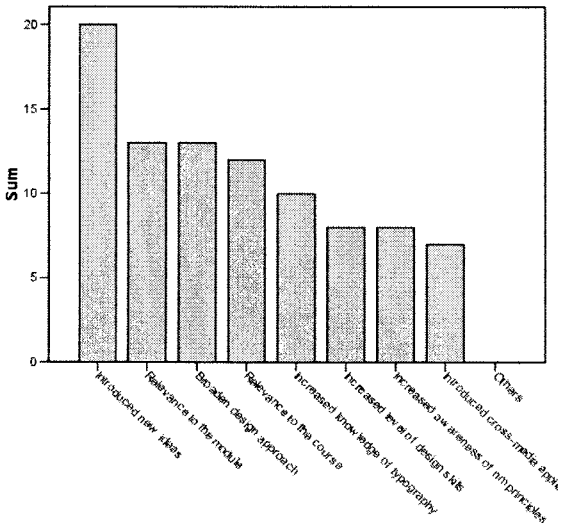


Figure 8.45. ARP 3 Uses of Lectures (Type Project)

Section C Questions 29. Based on your answer in question 28, what aspects of your top ranked lecture did you find most useful for the development of your overall knowledge of multimedia or graphic design?			
	ARP 2 Percentage		**ARP 3 Percentage**
Introduced new ideas	44.4	Introduced new ideas	87.0
Broaden design approach	44.4	Broaden design approach	56.5
Increased level of design skills	44.4	Relevance to module	56.5
Introduced cross-media application of typography	44.4	Relevance to course	52.1
Relevance to course	33.3	Increased knowledge of typography	43.4
Increased knowledge of typography	33.3	Increased level of design skills	34.8
Relevance to module	22.2	Increased awareness of new media principles	34.8
Increased awareness of new media principles	11.1	Introduced cross-media application of typography	30.4
Others	0	Others	0

Table 8.12. Question 29 Results

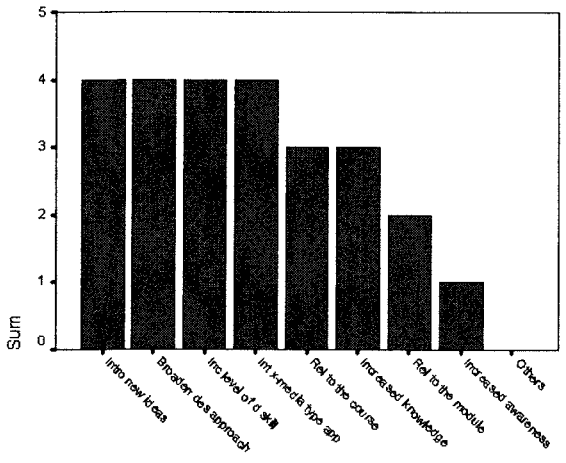


Figure 8.46. ARP 2 Uses of Lectures (Subject Knowledge)

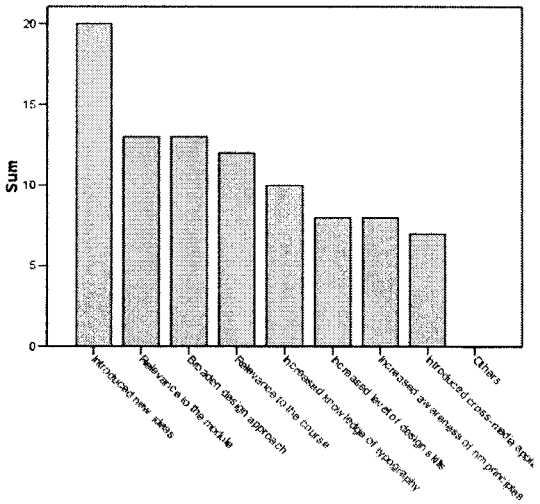


Figure 8.47. ARP 3 Uses of Lectures (Subject Knowledge)

Section D Questions	ARP 1 Mean Scores	% of knowledge increase	ARP 2 Mean Scores	% of knowledge increase	ARP 3 Mean Scores	% of knowledge increase
29. Rate your level of knowledge in the subject of typography prior to this project.	2.67		3.33		3.12	
30. Rate your level of knowledge in the subject of typography at the end of this project.	2.17	18.7%	2.67	20%	2.60	16.6%
31. Rate your level of interest in the subject of typography prior to this project.	2.00		3.00		2.36	
32. Rate your level of interest in the subject of typography at the end of this project.	1.83	8.5%	2.56	14.7%	2.12	10.2%
Legend - 1:Very High | 2: High | 3: Average | 4: Low | 5: Very Low						

Table 8.13. Section D Results

33. What was your impression of typography prior to this class?			
	ARP 2 %		**ARP 3 %**
Expressive	55.6	Interesting	76.0
Interesting	44.4	Challenging	72.0
Appealing	44.4	Expressive	56.0
Restrictive	33.3	Essential	52.0
Experimental	33.3	Experimental	48.0
Challenging	22.2	Precise	40.0
Understandable	22.2	Complex	32.0
Precise	11.1	Intimidating	28.0
Mysterious	11.1	Appealing	16.0
Tedious	11.1	Understandable	16.0
Essential	11.1	Tedious	8.0
Vague	11.1	Mysterious	4.0
Complex	11.1	Vague	4.0
Intimidating	0	Restrictive	0
Effortless	0	Effortless	0
Irrelevant	0	Irrelevant	0
Others	0	Others	0

Table 8.14. Question 33 Results

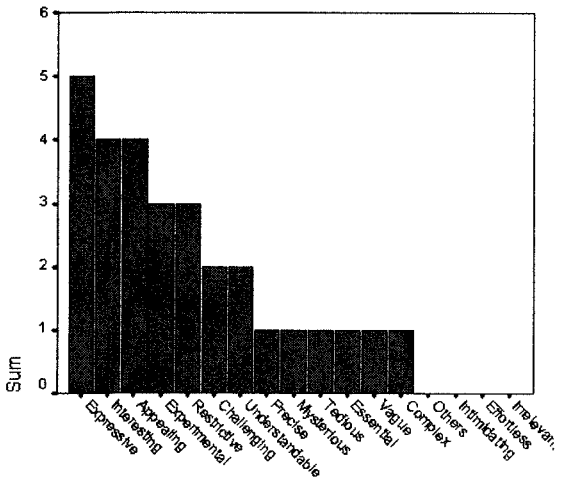


Figure 8.48. ARP 2 Impression of Typography

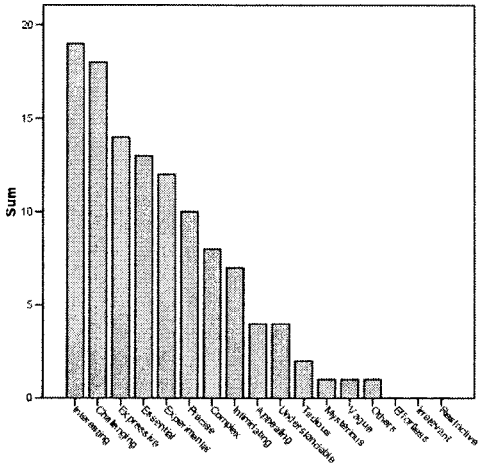


Figure 8.49. ARP 3 Impression of Typography

34. Has that impression changed upon completion of your project? If so, to what?		
	ARP 2 %	**ARP 3 %**
Not Sure	55.6%	24%
Yes	33.3%	28%
No	11.1%	48%
Comments	Concentrate more on what text looks like	Can be experimental with it
	Now have better understanding of the uses of 'type' in design, and how it can be applied	Still find it interesting, even more so and would like to learn more so I can understand it better.
	More interesting	Don't feel quite so intimidated by it
		I still feel its very challenging but now I enjoy it where as before found it quite tedious
		You can do a lot more with moving type and you can make it interesting without image

Table 8.15. Question 34 Results

35. On average, what ratio of time did you spend on the book jackets in comparison with the interactive type project?			
ARP 1		**ARP 2**	
Ratio	Percentage	Ratio	Percentage
90:10	0	90:10	0
80:20	28.5	80:20	33.1
70:30	28.5	70:30	22.2
60:40	14.33	60:40	22.2
50:50	14.33	50:50	22.2
40:50	14.33	40:50	11.1
30:70	0	30:70	0
20:80	0	20:80	0
10:90	0	10:90	0

Table 8.16. Question 35 Results

38. What aspects of the project contributed most to your learning?			
	ARP 2 %		ARP 3 %
Lectures	66.7	Lectures	82.6
Tutorials	44.4	Tutorials	82.6
Interactive requirement	22.2	Examples showing usage of type in discipline	39.1
Viewing past students' works	22.2	Additional tutor	30.4
Type focused solution	22.2	Motion requirement	26.0
Motion requirement	11.1	Examples from screen-based media	8.7
Examples showing usage of type in discipline	11.1	Interactive requirement	21.7
Additional tutor	11.1	Type focused solution	17.4
Technical requirements	11.1	Technical requirements	17.4
None	0	Linking concepts between the print and screen element	12.0
Recommended reading list	0	Other	4.3
Linking concepts between the print and screen element	0	None	0
Other	0	Recommended reading list	0

Table 8.17. Question 38 Results

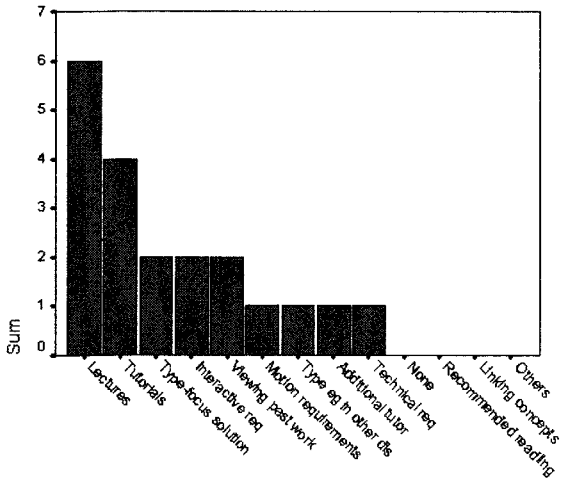


Figure 8.50. ARP 2 Contribution Factors

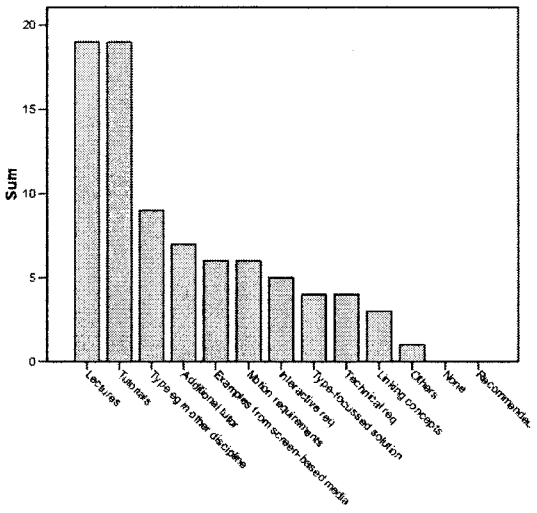


Figure 8.51. ARP 3 Contribution Factors

39. What aspects of the project detracted most from your learning?			
	ARP 2 %		ARP 3%
Technical requirements	55.6	None	69.6
None	22.2	Technical requirements	21.7
Interactive requirement	11.1	Motion requirement	17.4
Tutorials	11.1	Interactive requirement	8.7
Examples showing usage of type in discipline	11.1	Linking concepts between the print and screen element	8.7
Type focused solution	11.1	Type focused solution	4.34
Recommended reading list	11.1	Recommended reading list	4.34
Lectures	0	Tutorials	0
Viewing past students' works	0	Examples showing usage of type in discipline	0
Motion requirement	0	Lectures	0
Additional tutor	0	Examples from screen-based media	0
Linking concepts between the print and screen element	0	Additional tutor	0
Other	0	Other	0

Table 8.18. Question 39 Results

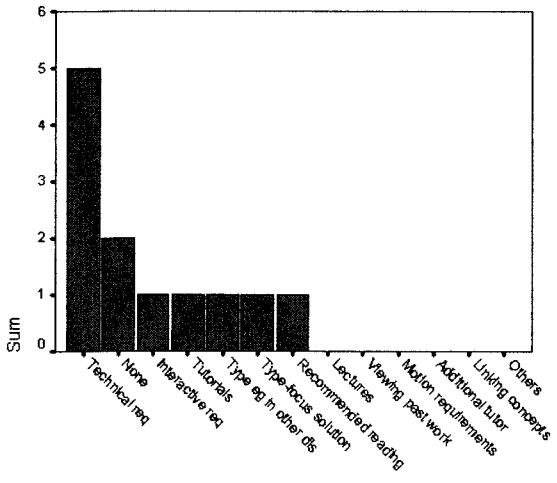


Figure 8.52. ARP 2 Detraction Factors

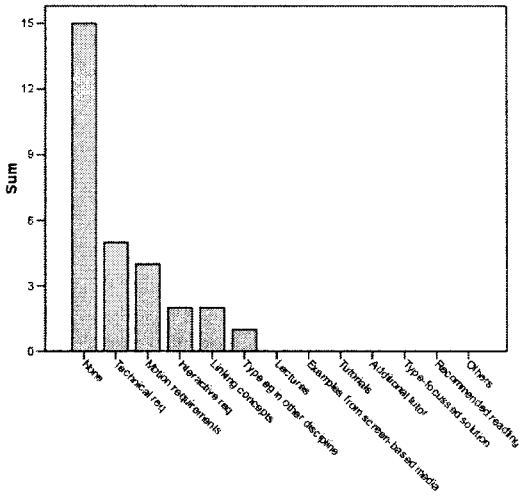


Figure 8.53. ARP 3 Detraction Factors

8.5.4 Examples of Student Works

Figure 8.54 A Selection of Students' Work from Action Research Project 1

8.5.4 Examples of Student Works

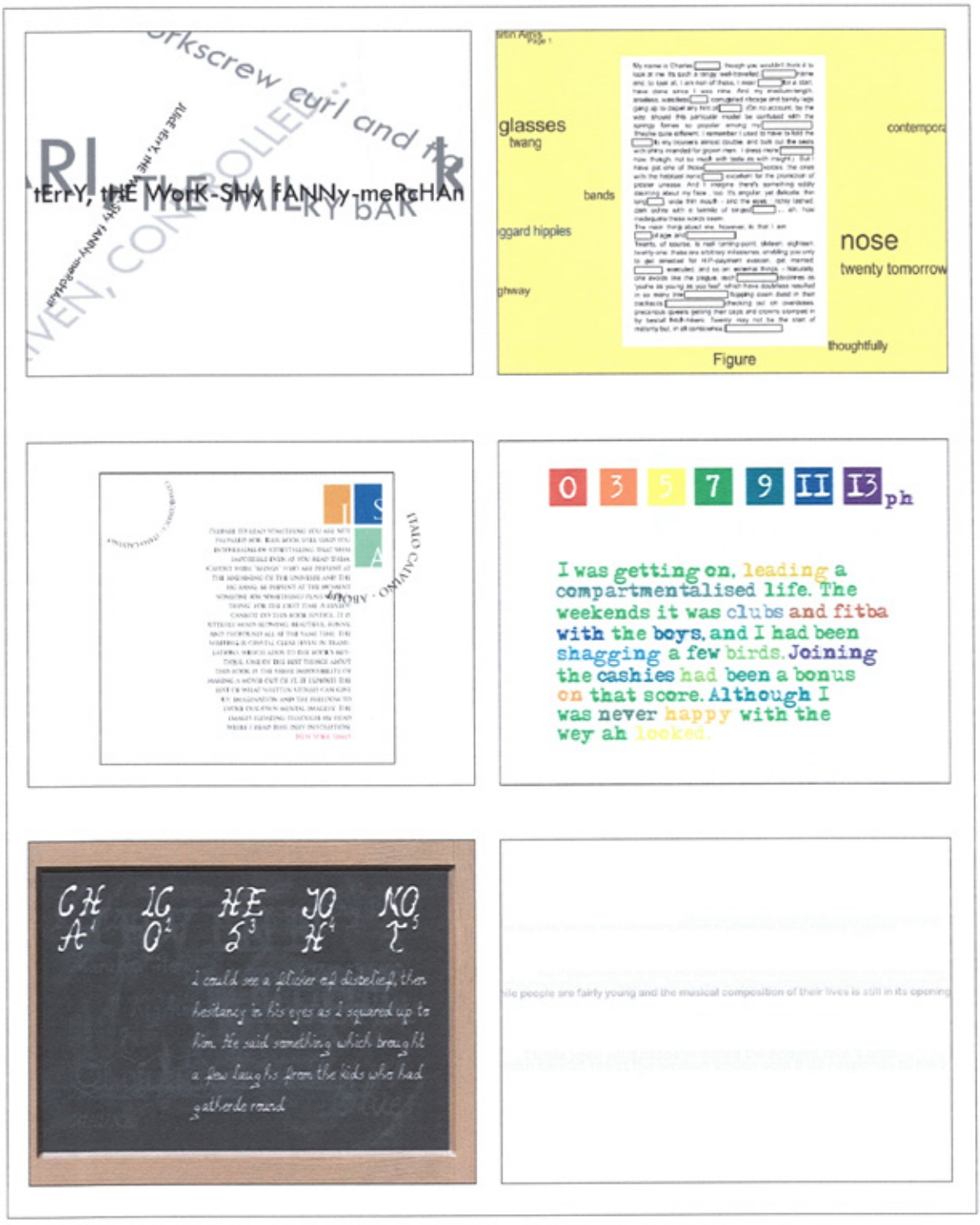


Figure 8.55 A Selection of Students' Work from Action Research Project 2

8.5.4 Examples of Student Works

Figure 8.56 A Selection of Students' Work from Action Research Project 3

8.5.5 Tutors' Interview Transcripts

As part of the data collection exercise during the Action Research stage, interviews were conducted with the primary tutors before and after each project. The transcription of two interviews conducted with the Multimedia tutor are presented here. One interview was conducted before the project began and the second interview was conducted after the project ended.

Pre-Project Interview with Kathryn McKelvey during the 2nd Action Research Project

This is an interview transcript between Kathryn McKelvey and the researcher on the 9th and 10th of November 2004. This pre-project interview was conducted face-to-face.

[Start]
Joyce Yee (JY): How would you rate the 2nd year, in terms of typographic skills?

Kathryn McKelvey (KM): The group that you are going to teach?

JY: Yes.

KM: This particular year group, its not good. I would say they are very poor. I think they are problematic. They've missed out on all the fundamentals that we taught. They don't realise the importance of them. In general terms, it's not good. There is an odd one that might be good. Their typographic knowledge is poor. We are actually addressing this in the 1st year, to make sure they get more exposure.

JY: Any ideas about their attitude towards it?

KM: On the whole they are quite indifference, like everything else. I'm quite worried about them. They are not as mature as a year group as I would hope. They haven't really embraced all our teaching. At this stage, there should be a leap from 1st year to 2nd year in terms of their understanding, but its not there yet.

JY: So how much worst of are they compared to last year?

KM: Miles off. I don't think it's unfair.

JY: Work ethic?

KM: Work ethic wise, absolutely no comparison. I mean I know they weren't great, but on the whole, the work ethic for the 2nd year is poor. I think they are a worry.

JY: Have they ever used type in print before?

KM: They've done some in the 1st year.

JY: They have done it on screen obviously?

KM: Yes.

JY: Do you see any difference in how they apply, or is it equally bad?

KM: I don't think they realised the value of it. Most of them don't use type as well as they could, quite naïve really on the whole.

JY: How do you see their approach towards the different medium, or do you not see any difference?

KM: Between the interactive and print-base media? I would say they favour the interactive content more than print.

JY: Is it because print deals with text or is it because they feel they can do more in interactive media?

KM: I think they can get away with more, due to the interactivity factor but I feel graphically they are quite weak. They can make things happen in the interactive work, but in print there's nothing to...

JY: ...hide it

KM: Yes, they are not aware enough with contemporary graphic design and graphic designers. This sounds really bad, but I had a presentation with them yesterday, and I came out feeling quite poorly. (Laughter) We got to do something really radical.

JY: Do you think it's a group to scare or to inspire?

KM: I think we try constantly to inspire, we have high hopes at the beginning of the project, when we are talking about concepts. I think their ideas are not bad. It's their execution that is terrible. They do things last minute and because they don't show their ideas early on, we don't have time to make them take a step back. We end up with a fait acompli when really we could have advised them on how to make it better. There are a couple of students who didn't do the first year and entered the course from somewhere else. They showed promise because they have better motivation. They want to do very well because they realised that they lack knowledge.

JY: It strange how it seems to spread in a group.

KM: I think in terms of inspiration you do think they should be inspired, and that they are trying but then it gets the better of them and as a result their work ethic goes down. They don't constantly plug at it as a group. Do you think I am too hard (asking Fiona Raeside)?

FR: No. Pretty accurate.

JY: You mentioned that you would be introducing more type into the course. Is it taking up a module or half a module?

KM: It's taking up half a module. Jamie's completed a type project with them using 'straight faces' and Fiona will work with them on 'multiplicity'. Fiona, can you elaborate a bit more?

FR: Jamie deals with the typography aspects; the brief is basically about the multifaceted side of a city, my brief is very image based. They use Illustrator and Photoshop to develop images to represent the city. They have to choose a theme. They are also allowed to use audio. For Jamie, they use typography (different typefaces) to represent the different facets of the city. This then culminates in flyers and banners. His is offline and mine is online publishing.

JY: Is the Newspaper project still on?

KM: Yes, for the 2nd year, but due to the scheduling, they might not have done it yet.

JY: So they would have had no experience with text-based projects?

KM: Oh... I have to go to this meeting.

Interview stopped. Continues on the 10th of November 2005

KM: Basically, their ideas are ok, some of them are quite good, but their graphic execution is very weak. Their actual making is very poor. The breath of material use, bringing things in on whole is not good. I was thinking of making them copy an existing design that is excellent in order to improve their design skills and to conduct some research on graphic designers and their output. Maybe to get them familiar with 3 designers... Their graphic work is quite bad, especially on this project with the book covers...I think we have to come down really hard and heavy and ask for research material. The utilisation of any research material into the development process is not good. So what is good? Their ideas are all right. Those are the areas where we need to get them to work on. They will talk a good talk but they just don't do anything with it. And actually, funnily enough I've actually had a conversation with one of them and I offered my help on his videos – 'I can make your titles look much better'. He said 'it's the software, its too primitive, it not that clever'. I said, 'I'm sure I can help you make it better', but in the end he didn't change it. This attitude is very disturbing, isn't it? He's a good kid as well, just ran out of time. It would have taken seconds to help him. It's the lack of care about the final thing that is very, very disturbing. I just wonder if we have to do something as brutal, like having a prototype presentation, allowing us to preview it before they complete it for the final hand-in. We are going to do that anyway; we will do a stage presentation. We will have to say it's a 'finished' presentation where we can look to improve. Or shall we say it has to be finished?

JY: Depends, I think they have to come up with something finished, and if we are not satisfied at that point, we can ask them to redo it for the final presentation.

KM: Yes. Right. I think so. They just can't continue like this.

JY: About the exercise, I think it's a good idea to get them to look at graphic designers and to come up with...not a report but something practical. Maybe trying to copy their style?

KM: Yes, style. Talking about the emulation factor with Fiona, we thought it might be a good way to get them to learn. It has to be printed and presented as well.

At this point we discuss the postcard project in more detail.

KM: It's about physically creating something, because when we saw the leaflets on Monday, we noticed how badly it was trimmed. Can' they just cut things properly? It's appalling!

JY: We stop at question no.8. We were talking about the level of typographic knowledge delivered to Multimedia students, and we did say it has been increasing.

KM: Yes, it is increasing. I will asked Jamie to focus more on typography this year, so that the students know that searching and selecting the right fonts is an important part of their design process. Its probably because the experience of the 1st years, who seemed to be relying on basic fonts that were already there.

JY: What were they relying on?

KM: This is an extreme example, but one student was using Times to do some of his work.

JY: Using system fonts?

KM: Yes. So rather than finding something really interesting, they were relying on commonly used fonts. I think it's all to do with their knowledge of graphics. It think the problem is, there are a couple of students who are strong graphic designers, but their work ethic is such that they are not pushing themselves ahead. They are not striving ahead and showing people on how it is done. So they have no role models. We have asked Jamie to specifically concentrate on typography with the 1st year, which is what he has done, he has asked them to be creative with it. As for the 2nd years, we have to do remedial work with them.

JY: Is there any area within typography, which is not covered at the moment? I know Jamie is starting that, but do you see anything else being introduced to the 1st year?

KM: I don't know. We have to review what he has done and see how it feeds through. Because we do an annual review and see if there is any other work that needs to be done on that. On the whole, their interactive work is not bad, just that their print-base designs do not have the same quality.

JY: Why do you think that is?

KM: I don't think they really understand print as well, even though they do a fair bit in print. They don't really grasp what they can do with it. And in a way, like I said yesterday, I think in their interactive work, there are other design elements that can hide the bad typography.

JY: So they can get away with a lot more.

KM: Yes.

JY: Were there any problems when the staff were planning and delivering the type classes? Was it to do with historically, it was never considered as part of the curriculum? Or maybe there weren't staffs that had the knowledge or were interested to take it on board?

KM: As we appointed different staffs in, as things started to consolidate, we got a better understanding on the available skills. When we've got more full-time staff you can actually think clearly on where you want to go with the input of these staff members. Being here every year, we can build on a fixed base. When you work with many part-time staff members, as what we had before, it's very difficult to move from year to year and build on it. I am not teaching the module, as a result have a vague idea of what's being going on. So I think now it's so much stronger, with the staff members that we have now, especially with Jamie's background. It's all very good quality. There are drawbacks in terms of technology because the font library is always a problem. And actually making things work on the Mac OS is a problem; sometimes the students struggle to load the fonts on a machine.

JY: Does the school buy fonts?

KM: I think they are in discussion in the minute. Ted and Jamie are in discussion with John Le Rolland, the staff in charge of resource. I think because they are very expensive and we don't need all the fonts that are in the library, I think they are constantly trying to work out which one we are going to get. And to keep up to date and some of the font management software that we're had – like Suitcase is really old.

JY: I don't think you need it at the moment. Most fonts are now cross-platforms – like Open Type.

KM: It just seems to be a bit of a problem, a little bit of a problem. But I think it's all right. I think it seems to be working ok. But that has been a glitch, getting fonts installed. Most of them have their own machines and often download their own fonts. Probably Jamie knows a bit more about it. But I do know it has been a bit of a pain.

JY: It would be great to get a workshop from Kelvin Smith, in the letterpress room. It would really make them learn type.

KM: Yes, that would be a lovely idea.
JY: That's the best way to get their head around typographic principles.

KM: Yes, I think we don't get enough hand–crafted work. That's another thing I thought of today. I think students need to show evidence of their sketchbooks. I think they need to start with that, to show us an idea, to develop it, instead of relying on the digital design document, instead of talking about it all the time. Would you support it, having a sketchbook?

JY: Yes

KM: Because the use of materials doesn't come till much later on. You can't design unless you know what you are going to use. And to a certain extent the design document does not allow for that, because it's about presentation and not exploration.

JY: It's more about post-rationalisation.

KM: It is, and I think some of the key tools, like a sketchbook in the development period and to me its absolutely essential in how you utilise your research into your development. They don't do that; they do the research and leave it. It's madness. So I think the physical act of drawing is something they have to do again.

JY: We can try to force them.

KM: They might take issue with me, but when I design, I draw or sketched to get the idea down.

JY: It does not matter what forms it comes in – as along as it is a visual piece to describe their ideas. It can't be a verbal. Must be something visual.

KM: Yes, it has to be something visual. The approach, the material they want to use. I think they will have a problem, but I don't care. I think it's becoming superficial. It bothers me. I think we're going to have a hard job. This module will be a killer.

JY: Killer for them or killer for us?

KM: For us, I think. Don't you?

JY: I have no problems being harsh. I just take the cue from you.

KM: I'm don't tend to be hard. I'll tell them what I want, and if they don't do it, I don't get upset about. Where I get upset is at the presentation, when its rubbish. You try to hard to inspire them,

to keep them buoyant. It's then when you realized how bad they are. But if you want to crack the whip, we can, and make sure they are on track. I keep going back to this. It might not be as drastic as I this, but I think it is. They left me with a bad taste Monday. Jamie was not impressed and we knew they weren't good. In a way you feel sorry for them, as they don't know how bad they really are.

JY: Would it be worthwhile to have a chat with them?

KM: I will. I don't want Jamie to do it because it was my module that they messed up. And I want to sort it. I know the kind of relationship I have with them, talking with them at a certain level. I won't shout at them. I'm just going to say, hey guys, it has been disappointing and we have thought of things to make it work better for you and be more positive. Rather than say their work is bad. I don't think it works. Do you think it works? I have students coming up to me saying that they can't handle criticism very well.

[End]

Researcher stopped recording as the interview questions were completed and the discussion became more general and unrelated to the action research project.

Post-Project Interview with Kathryn McKelvey during the 2nd Action Research Project

This is an interview transcript between Kathryn McKelvey and the researcher on the 27th of January 2005. This post-project interview was conducted face-to-face.

[Start]

JY: What were your impressions, feeling, and experience having conducted the project again?

KM: Having delivered it again, I think I was actually quite pleased with the outcome, at the end of the day. I think with the second time of doing it, you have an expectation and you know pretty much what will be happening, anticipate and tighten up the loose end. I was pretty worried about it because of that particular year group. I thought they would be a problem because we did not get the best students, no doubt about that. But I think it was successful because we knew there were problems, and we spent time with them. And they came in for most of the lessons and they allowed us to help them and support them. I think there were some really good improvements shown, actually.

JY: Because we obviously made a number of changes, for e.g. changing timescales, putting in a deadline. I think some changes were successful and some weren't?

KM: I think all changes were really quite valuable, but it was quite strict at the beginning. They were informed about it at first and I felt that we were coming down quite heavy headed, but I thought they really needed that approach. I think that if they allowed us to make them stick to the timetable, they would have done so much better. They would have had more success. I think it really helped them, but I get worried about that because they are not very independent in managing their time. And I wished that they were more independent.

JY: You really did not want to monitor them and be strict with them.

KM: I really didn't like having to do that, but we recognised that we had a problem with that year group and I think it worked.

JY: How about the deadlines for the book jackets? Did it work?

KM: If they did finish on schedule like they were supposed to, they would have been more successful with their type project. But I think there was enough to see for us to comment on.

What really worked for me was on the day of the deadline, they did bring work in and we could help them to progress. That was absolutely essential. Whereas last year, we did not get that far and was not sure how much we saw before it became a fait accompli. Some of them, but some of them were quite reluctant to change, where else this year, they did.

JY: That's true. Well, some of them, not all, Adam did not do anything.

KM: No, but some did allow you to really help them.

JY: How about the sketchbooks?

KM: The sketchbooks were not great, and they did not use them the way that they were supposed to. I felt it was another kind of imposition for them whereas I would keep a sketchbook and make it part of the design development. However, what was interesting was that the students started off with the sketchbooks and then ignored most of what was in it. I thought that was very odd, I don't understand how they could do that. Some of the material was documented in the Design Document, but they weren't actually used. I'm talking generally; there were some students who did use them. I think for a long time, we have not imposed sketchbooks and its time they start to think like a design student and make sure they use it in every project.

JY: Postcard project?

KM: Well, on reflection, I thought the postcard idea was a really good idea. I think that at the end of the day in some of their presentations, the students used their chosen designers to generate ideas and they have actually referenced some of these people. In their Design Document, there have been names of designers cropping up whom they did not know about, and now they will be quite happy to bring into conversation. I thought that was a very good thing.

JY: So that was evident in their Design Document? Their research process?

KM: Yeah, I think although they really weren't happy about having to do it, at the end of the day, they saw the real value of it. The execution part helped with some of them but not all.

JY: More of trying to get them to find out about designers than rather to learn their styles. I thought that was the difficult part.

KM: They did not understand about the content. I think the brief that they got was very clear but they did not understand that it was that simple. And some, like Steven obviously did very well with that, but he has always been good with execution. But his concept was a quite dull. He didn't allow it to be quite inventive, which was a shame. But on the whole, I think it was a good thing to do.

JY: Critique partners?

KM: If they let that let work the way it was supposed to, it would have been much more successful, but I think it was a good thing to do as well, because the students would have never say a word during critiques.

JY: Would they say anything during critique, previously?

KM: I think the way we have structured critique sessions in the past was that there was only time for staff to say something and you move on very, very quickly, But actually I think that the old fashion way of doing a critique was that students will contribute and always have something to say. It's hard to pick on someone because they don't want to speak and they find it hard to criticise each other's work. That's a real weakness in this group. But I think when we sat down and looked at the book covers in progress, they were great. They were so good at critique. They had some brilliant ideas, those students. And I think that was a tremendous value in the end.

JY: I know that we tried to emphasise conceptual and developmental side to the project, do you think we did enough to achieve the quality that we aimed for?

KM: I think they really struggled to understand the fact that the concept was broad across the covers in general term, for e.g. about the author and specific things that made each book different. They got embroiled in style again, which is what they did last year. They did really struggled with the idea of a global concept. I don't know how you could explain it except to show examples of past work. (Pause)...It was tricky to get the point across.

JY: I supposed people like Ben really got it in the end but it took a while, a journey through many different ways.

KM: I think Ben was a major success with that. With the concept that he chose, he really explored what he could do with it. I don't know if he chose an idea that offered many options or whether he really understood what we were trying to teach. And he just took off. I'm really delighted with

him. I guess you just have to keep plugging away with it. They were not the strongest conceptual thinkers in their year group but I think they have learnt a lot from that.

JY: Yes, I think they did improve, some individuals in the group. How do you think they responded to my presence and role in the class?

KM: I think they quite enjoyed that. I think it's always good to hear someone's opinion. If there was a problem, they would always come to you, email you and all that stuff. I think that was good.

JY: I felt having run it the second time; we were a bit more familiar with the content and how to deal with it. I didn't observed as much of a separation between the two projects, for e.g. they were not thinking that 'Joyce is the type tutor' and 'Kath is the book cover tutor'.

KM: Yes, yes. And what's good is that we have done it before and we can reinforce each other's opinions. The students see a real strength in that, no matter whom they go to, they get an opinion about it. Technically with the Flash, I'm learning. I know there were some instances where you got asked about it but that is due to their lack of confidence in it. As a team thing, I think it worked really well. As a year group, they had the luxury of actually having to use our time really well. And I think they did. Some of them did.

JY: Overall, how well did you think the students performed compared to other modules? Below or above average?

KM: I think they performed above average, generally. I really thought it was going to be a disaster. Heavy going. I'm tainted with the fact that a few of them did so well in terms of progress, and yet the stragglers at the bottom end (which we never saw) followed the same pattern. However there were some that broke the pattern.

JY: And that was the important bit.

KM: Yes. So to me they performed really well. They would have scored comparatively high in their option compared to others in other options. We have not got any 1st out of it, but we have got very strong 2:1s though.

JY: Compared to the level where they started?

KM: I think the people in the 2:1 category were easily a grade below before, if not 2 grades.

JY: In terms of concepts, how does that compared to last year?

KM: Actually, I think they were better.

JY: On the whole or specific individuals?

KM: I think specific individuals were better, with some of their thinking. Probably in terms of style they were more interesting in what they did but this year, their thinking started to make connections between the type and the book covers, conceptually. They really achieved the continuity whereas last year there was a definite separation.

JY: Also, we expected the class to be really bad. We made an effort to improve it.

KM: I think that's it, we go in knowing that there will be a problem unless you do something about it. You can identify what the problem is with past experience and then they've got to let us help them. I think some of them did and we told them that if they did allow us to help them, we could help them do better. And they did have the luxury of the two of us for quite a lot of the time. Probably if they had less time, it might not be quite the same thing. We did spend a lot time talking to students, who actually then acted on our advice. All of that, identification of problem, thinking and knowing. I don't think it wasn't true, as I do think they were weak to begin with. They have done a reasonably good job, about half of them.

JY: Which part of the project do you think they struggled with?

KM: I think they struggled with the concept at the beginning and I think they struggled with what the type was going to do.

JY: Even though we showed them some examples?

KM: They have a non-retentive memory; they don't remember loads of things. They don't go back to look at it either.

JY: I found it very odd, looking back at the questionnaire that I collected. I asked them what contributed and detracted from their learning. A lot of them did say that having an interactive component was quite difficult.

KM: Oh, did they? (Sounded surprised)

JY: I found that odd, maybe they thought that they needed to make it very 'interactive'

KM: I think it's quite hard to get them away from their thinking of web and web buttons. Even though they have done exercises in quite innovative computer interface exercises. They are still compartmentalising and not drawing from the knowledge before. And because its something new, and it does not exist. BUT because it doesn't exits, you are more likely to develop new approaches. Though, they are copiers, as a year group they tend to copy, reinvent the wheel. That's a real problem. I've being trying to stop them from doing that. It's difficult but I do think that they had some good ideas in the end. They did stop copying ideas.

JY: Do you think having to design for 2 different media affected their choice of concepts? That happened last year.

KM: I don't that it did. I don't think they thought too much of the second part. I guess they thought of the covers and then moved on to the type project. I don't think it limited them as they did not think ahead.

JY: I can only remember Ben Saunders who actually did change his concepts but that was more to do with the book covers than the type project. The rest of them seemed to be, if they decided what they were going to do, they did it.

KM: I think what's really great was the fact that some of them had to rework their concepts for a different medium. It was a really good exercise for them. I think some of them really understood the requirements. But I think people like Ben who often changes his concepts halfway through a project, would find it's too hard to make his concept work, as a result changes it, and then find that he doesn't have the time to develop the second concept properly. He developed his idea without consultation and as a result, missed out on our advice. I always see problems with that kind of behaviour. Additionally, he did not turn up either. He could have solved that problem and he would have had a great idea, he had many good ideas. He just didn't apply himself, which was his real problem.

JY: We tried spreading out the lectures this time. Do you think it worked?

KM: I think it probably worked a bit better, although I don't think they remembered the examples again. No. I think it probably had more relevance in the way it was pitched and spread

out. They just don't remember the things that they saw. I don't know if any of them downloaded any of the lectures at all.

JY: Despite giving a deadline for the book covers, they seemed to spend less time on the type project.

KM: Yes, they did. Interestingly which was slightly different from last year, they had a terribly fear of Flash. I still think they have a real problem with Flash. Whereas last year, they were more competent with Flash. This year, I know because I did another project with them. They were horrified that they had to do produce a lot Flash movies.

JY: What are they used to?

KM: That's good question. It's their main authoring tool, wouldn't you think? That and ...

JY: That and Dreamweaver.

KM: Yes, Dreamweaver, but they really struggled with that as well from our conversations. They were doing a Dreamweaver project with Jamie and they really struggled with that. I don't understand as they did all that basic stuff in the first year. It's the retaining and the holistic aspects, the moving on and the building, which are the main problems. They just push it aside and forget about it and think that they need to start from scratch. Their Flash fear threw me completely, because I thought they have the basic training, how could they not know it? Some of them said 'oh I've got to start learning it again'. I don't really understand that kind of mentality at all.

JY: Well, it seemed to be an anxiety about not having software skills rather than not having design skills.

KM: Yes. We are trying to get away from that and emphasise that this is a design programme and that you use skills that are right to achieve the ideas that you want to achieve. We will tell them what type of software to use. They do get bogged down with the technicalities, which is a shame. Rather than design something and then see if they can achieve that, they design based on their skills, which are incredibly limited. They are limited because they make them limited, not because they have to be.

JY: I expected that if they knew they were not skilled, they would spend more time trying to improve it.

KM: You would think that, but funnily enough they were doing a project with me, where I put them into teams. I knew that some of them would be quite strong in Flash, so that they could learn from each other. They had to do a Flash based project for me. The result for some of them were really, really good. They did some lovely things. I was quite delighted. I think they have learnt now and they have built their confidence a little bit. I don't know if it fed into the other projects at all but I think there seems to be an element of success there. It is a confidence thing with them. I don't know why, unless it's because we keep telling them they are terrible. Could be? (Laughs)

JY: That's Jamie's theory. 'Ohh, you beat them too much. You should give out some carrots once in a while'. I don't agree, I subscribe to the stick not the carrot approach.

KM: If you tell them that they are great, are they going to learn anything? If you tell them they are terrible, get your act together...

JY: He seems to think that we should say 'You know your work is good but you can do much better'. I don't think that will work.

KM: Well, if doesn't work for me. I always think that if you tell them 'oh, god I'm so disappointed with you, its really upsetting me that you are not performing.' But actually they don't really care.

JY: Probably not.

KM: But I am really pleased with what they did in their team project, but you would probably get the odd individual who wants to do it and do it anyway.

JY: The strong one in the group that pushes the standards.

KM: I think they have got the message that they have to be more proactive. And this is why I'm support having a strict deadline. I want them to be independent and proactive but they are not. You have to make them do things to a timetable.

JY: Now, I'm tossing ideas into why the students see this as a two-part project, is it due to the way this module is being sold to them. Do you think it would have made any difference if we introduced the type project first and then the book jackets?

KM: That would be an interesting thing to do.

JY: I'm not sure if that would make a difference or if they would naturally start with print before moving on to screen.

KM: I don't think they are great at print, you know.

JY: Would they spend more time on what they are not good at or would they spend more time on what they are good at and can do it easily?

KM: I think they would spend more time on things they can do easily... I don't know. It's really hard. A lot of them left it till Christmas to start their type project. Rather than think, oh I've got to start my project early in order to anticipate any problems.

JY: But I think they seemed more anxious about the book covers.

KM: They did seem very anxious about the book covers though. I don't think they're great at print. They don't understand a huge amount about it. We did give them a fair bit of time on the book covers and they let that slip because they did not hit the deadline. As a result, they did not spend enough time on the type project. Yeah, I think actually, I thought this project was a great project, a simple project and a beautiful thing to do. As an option it was easy for the students but actually it was not, was it?

JY: No, not when you have the cross media application. I think that threw them off a bit. How did they perform in other modules where they had to do a print and a screen module?

KM: Not very well. Usually one will get more preferential treatment.

JY: Which one?

KM: I would probably...its really hard to say. Actually I think the print stuff will probably come before anything else. Because of the way that we organise it, say for e.g. Information Design, we start with printed matter and the kiosk comes at the end it because of the way that we would

naturally do it. But it might be a really interesting idea to do the digital first. It always follows that format.

JY: So it's quite a consistent format.

KM: Yeah, because they are very, very poor at time keeping and they do let things slip a bit.

JY: I'm trying to pin point the reason for this. Is this a natural design process or is it the timetabling?

KM: You would think they would handle the screen-based thing really well cause that's what they do in most of their modules. They do the print module once every semester.

JY: Let's take an example, if you were working on a live project, what would you tackle first?

KM: It would be logical to do the print based thing first. But it would be interesting to switch it round. Would they get the concept better if they did it the other way round?

JY: I don't know. That's what I'm interested in.

KM: I don't know if they would.

JY: They can't get away from a medium. In order to demonstrate their concept, they need to show it some format, like the concepts for the book covers were shown using in a book cover format, while their type was not thought of. It wasn't visualised.

KM: Yes, actually you asked them to storyboard, but they were terrible. Their storyboards were really poor. It was like pulling teeth to get them to do that. I think that's the weakness in their design document and that's why the sketchbook must stay and they must get used to jotting down ideas. I really believed in drawing. You can get ideas down very quickly with a pencil and paper. I think we had this argument with Steven, 'oh I go straight to the computer and put things down' and everything is polished. So what's he's doing is knocking all the roughness out.

JY: Hmm, he is already editing things before he finishes.

KM: Rather than developing something that could have been really raw but great. I find that a real problem. That was how the students used to be many years ago when we first started the

course. An absolute refusal to used anything except computers. I think we need to do that. Even if they had to spend time drawing in their sketchbook. God, Jamie will have a fit.

JY: Why does he object to drawing?

KM: I don't think he has a thing against drawing, I think what it was, is he introduced the design document as a digital output thing. What we did before Jamie came was that we would work on sketchbooks and layout pads, and have their drawings and their design process will be on them. It was always ugly, they never did it very nicely, but they would do their storyboard in Photoshop and stuff like that. When Jamie came in, we brought in the design document so that they can do it digitally, be selective, and judge and write more about it and get their concepts down, and do a lot more work on it, which was great. But as a result, it cut out a lot of sketching.

JY: I think the DD is meant to come at the end of the project. It is a review of the project.

KM: That's really interesting that you say that. I think that is true and that it is a living document that goes through the project. But with the students, they are presenting the document about half way through the process before they have completed their designs. For me it's a living document, but for the students, it's a perception that it's a nuisance that they've got to get out of the way. I don't think they used the design document the way it is supposed to be used.

JY: I think the DD is useful when you have a post-project review about 'how did I do it', 'how well did I do it', and then you take excerpts from your sketchbook and then describe the process. You can't do it when you are doing the work.

KM: And the argument when the drawing came in, and I said do we really need to have so many bits of text to explain a concept? Can't they draw what they are saying? They say 'but we don't do drawing'. But to me, I can immediately understand an idea through visuals than with text. So we had an argument about it. Quite fun actually! I supposed he was thinking what I meant was that they should be sitting and drawing still life which wasn't what I was thinking at all. I was thinking if they could just show me on paper what they were talking about because I found that much more accessible. After our discussion, there was an acceptance sketching had a place, I mean how could you do a sketchbook without drawing? Although they do tend to turn it into a scrapbook.

JY: Scrapbooks are ok, that's what a sketchbook is for, to bring in stuff.

KM: It is, but I don't understand why students gather all the material but they don't show you how they might interpret that or what their thinking is or why that is a good thing or what they might be doing with that. That for me is the key to all of that. When they start to do that exercise of 'lets look at this thing, 'how am I thinking', 'what does that mean to me at this moment in time' in terms of interface. It's not about a pretty picture, I want to see their thinking. I guess its coming from a fashion background where there is a lot more drawing involved and having a lot more development on paper. But I don't think that's a problem. Having different points of view of how you work is fine.

JY: I think it's not about the form of the sketchbook, but its details, your thinking. And while I was impressed with the DD when I first saw it, I always thought it was an end of the project artefact rather than using it to present stuff. They are using it for the wrong reason.

KM: When it becomes an Information Architect document, which it does eventually, it starts in the 3rd year. It becomes a much more full rounded process with what they do. It involves user analysis, scenarios and competitive analysis. They should do that early on as well but I think it's a much complete picture and they find that of value. But they do skim over the areas where it can be used to inform, like the scenarios, where they build it up and get great ideas out and how to improve their project. They tend to create a scenario to fit with the project that they think is right. So I think that's really funny.

JY: It's an easy way out.

KM: Well, we have to watch this space.

JY: Yes, that would be interesting for me to find out as well. Well, I guess this is the second time that we have worked together, how was the experience for you? How has it changed?

KM: For me, I was really looking forward to it because it was a really good experience. I think the value that you brought, with the lectures was great. Its really good background information for them. It was lot of different information for them to assimilate and sort. My presentation in the beginning was very general whereas yours were informative and helped with a lot of what they did in the rest of their course. If they are smart, they'll listen and will learn a lot. I was really looking forward to it and really quite enjoyed it last year. But the first time you run a course, its always tougher, because you'll never know where the pitfalls are going to be. This year, we had a good idea of all the pitfalls and what I wanted to achieve, and I really knew the year group really well at that point and what they required. I knew I had to do something to make that work. Additionally,

you were quite happy to impose things on them as well, in terms of deadline. So though it looked like a strict regime, it was of real value. I like working other people, bouncing ideas of other people, see what they think and their opinions are. Sometimes when somebody reinforces what you think, that's good for the student so that it's consistent. But if we were wildly different, that might be a different scenario altogether.

JY: It might have been interesting to play devil's advocate between us. But at their level, they probably need a specific direction from us.

KM: More consistency.

JY: You need discourse at PG level

KM: Yes, probably when they've got more judgement and discrimination and where they could decide which is the right direction to take. And for UG, it's really quite hard for them. If you offer them too many opinions, it's very difficult for them to organize them. It's better to have a consolidated opinion amongst different tutors. They are too young.

JY: If you were teaching the same module, would you run it with the type project or revert it back to its original plans?

KM: No, I would want to run it with the type project. I would prefer to do that because the different media makes them think in a different way. They did a good job conceptually in how they transferred concepts. I think it's a really healthy exercise for them to do. Even though they were scared, there was an understanding that you can use a tool in a different way, like the Flash tool. I would expect that it would quite an important part of the module. But I don't know how I would do it; you would have to sell your lectures to us! (Laughs)

JY: Its good to hear that you will keep it and that you found it useful.

KM: But I think we have come to the conclusion that we do too much print on the course. We think there is a little bit too much print, but when it's allied with something else like this, you can justified it better.

JY: What percentage would you say its print?

KM: Well when you actually look at it on paper, it's not that much. But in the 1st year we do a whole double module, with a print component, in each semester.

JY: That's quite surprising.

KM: Yes, don't know why. It is quite a lot. Plus this is an option, which is print-based, but the other option is not. However, it does seem to be quite a lot. They will do the Information Design module, which tends to have a lot of print-based output such as magazine or newspaper spreads and then they will develop a digital component with a PDA. I'm happy to have that. Already in the next semester, the 2nd year will be given a newspaper or a magazine project. The other Graphic Edge module will probably also have print-based component, though it might have some online stuff as well. So there is quite a lot of print work already.

JY: Was it a conscious decision to have cross-media stuff or did the staff feel that print was weak and needed to be addressed?

KM: I think the original philosophy of the course was to bring in the print-based which was supposed to be about a module a semester. We did it because it was to enable the students to have another string to their bow and to understand the medium. But it seems to have grown. Because we have brought in sectors like Entertainment design, Innovation, Promotion, Publishing and Information design. Promotion, publishing and information design can all be print-based. But they all have digital as well as print based output. So you can see how the weight seems to have shifted.

JY: And they seem to introduce the print-based work first.

KM: Yes, I don't think it's because it's immediately visual and static, so it's easier in their opinion. They work with Photoshop and Illustrator. That might be it.

JY: They way we work our interactive CD is that we will develop the concept for screen first, and then design the print-based item to go with it.

KM: Yes, that's right. I have an MA student, who's working on an online CD guide for Shanghai and he worked all on screen stuff and then he created promotional part, which was print-based supporting materials. So it all came in the right order. I don't know why the students still tackle the print-based stuff first. Take for e.g. the information design, what happens if they design a huge scale spread, could be tabloid or a double page spread to fit facts and figure. But then how

would they reduce that down to a PDA screen size? But you have to go through this process before you can do the tiny PDA thing. Don't you really?

JY: But the design considerations might be different if they had to do the PDA first. I'm just curious what determines their design process. Is it the emphasis on whether it is a print-based project or a screen-based project? Which is the add-on and supporting material? That's how we decide.

KM: But the conception of project was that it was book covers first and would probably only have been book covers if you haven't wanted to do something with them as a project. I think its more valuable the way it looks now and that's the perception and the way it is. We wanted to do something graphic, we thought 2d rather than motion graphics.

JY: Interesting to discover that you do a lot of print-based projects.

KM: Yes, but we probably need to think about that quite carefully. I don't know, but would be it terrifying to switch the emphasis on the type project and to introduce it first?

JY: I don't know, it would be an interesting experiment. Would their output, design processes and concepts be different?

KM: Yes it would. Because they would have to know about the 2nd part as well, or would they? Would they be interested? Would they get bogged down or would I introduce the type project and then say now, translate it into some book covers? Shall I do it? Might do it next year.

JY: I think that's it. Thanks for your time.

KM: You're welcome.

[End]

APPENDIX 9

Peer Review Data

9.1 'Introduction to the Cross-Media Typographic Framework' Presentation to Peer Review Group

9.2 Peer Review Question Guide: Educators

9.3 Peer Review Question Guide: Practitioners

9.4 Peer Review Transcript: Educator Group

9.5 Peer Review Transcript: Practitioner Group 1

9.6 Peer Review Transcript: Practitioner Group 2

9.7 Interview Transcript 1

9.8 Interview Transcript 2

9.1 Introduction to Cross-Media Typographic Framework: Presentation Slides

Figure 9.1 Slides No. 1-6

9.1 Introduction to Cross-Media Typographic Framework: Presentation Slides

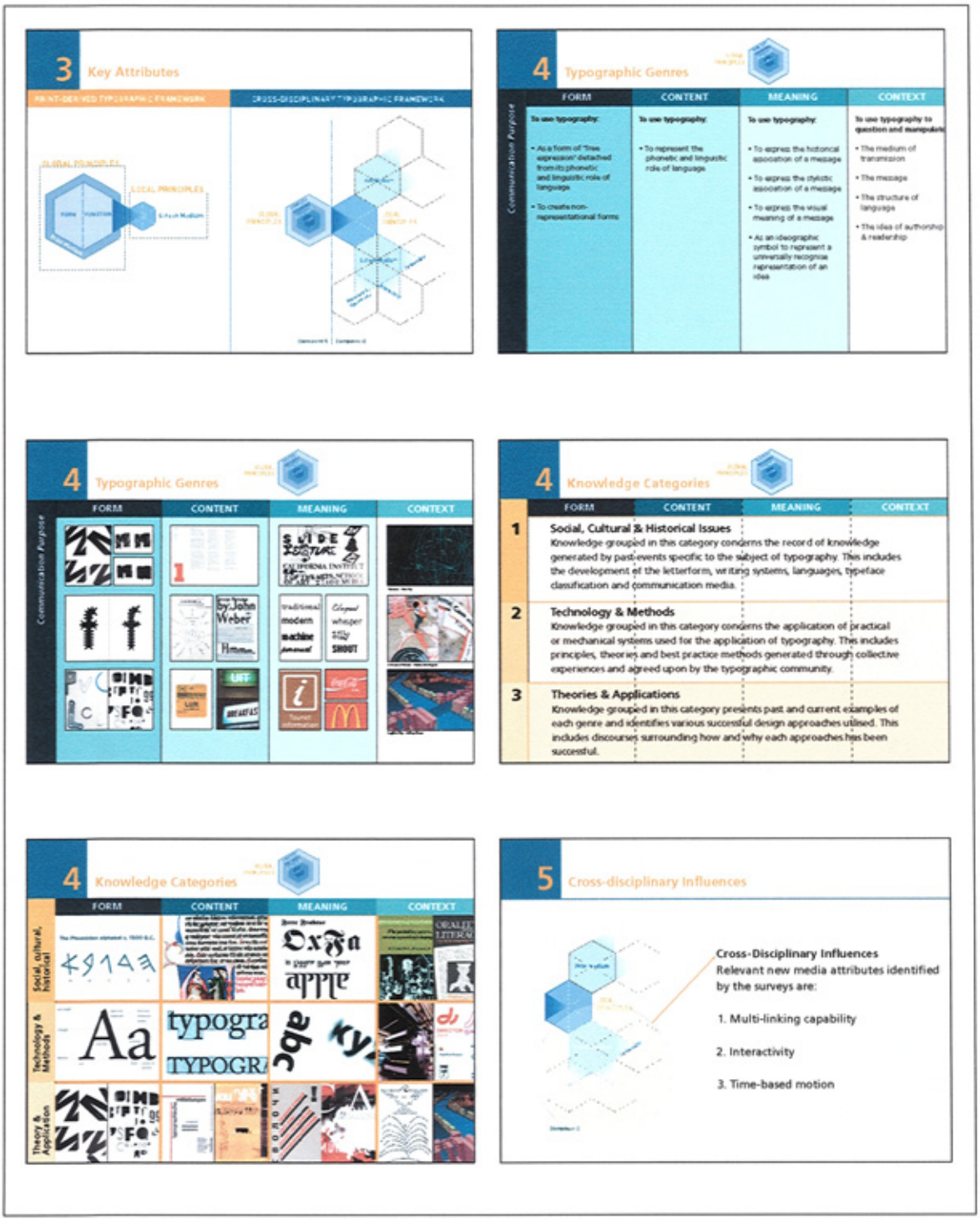


Figure 9.2 Slides No. 7-12

9.1 Introduction to Cross-Media Typographic Framework: Presentation Slides

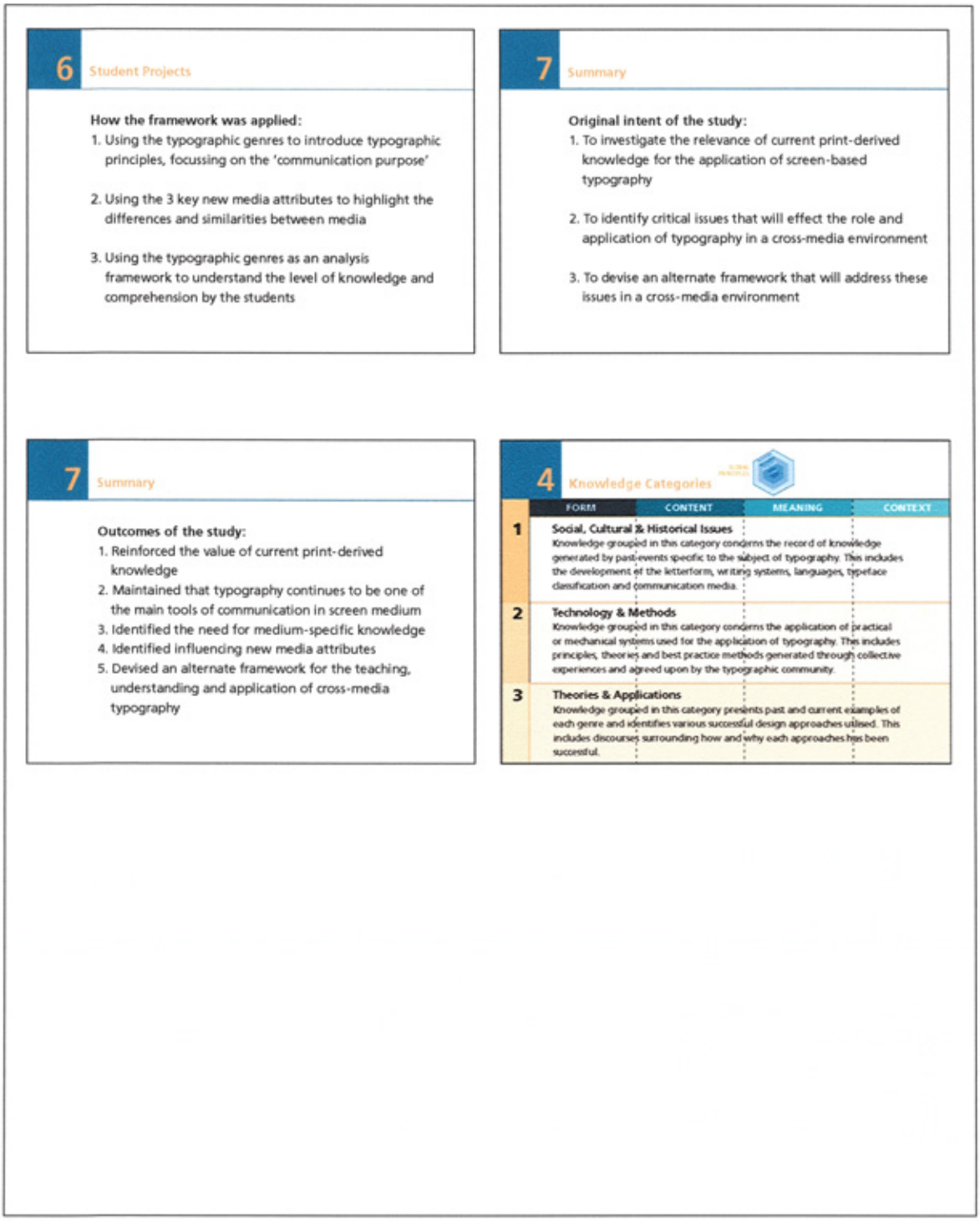


Figure 9.2 Slides No. 13-16

9.2 Peer Review Question Guide: Educators

Activity	Questions Category	Discussion Topic	Descriptions
Introduction			*Introduction, housekeeping issues like length, facilities, and refreshments.* *Practical issues: recording, confidentiality and setting rules of discussion.* *Setting the research context and detailing the objectives of the session.*
Terms definition			*Providing definitions of:* • Typography • Screen-based media • Screen-based typography • Typographic knowledge • Typographic skill • Framework
Discussion	Opening Questions	Experience working across media	1. Please complete these sentences • What I like best about the current usage of typography for screen-based media is... • What I like least about the current usage of typography for screen-based media is... • The main difference between teaching typography for print and screen is... • The main similarity in teaching typography for print and screen is... • The differences in the skills required for print and screen-based typography are...
	Introductory Questions	Current models of type education	2. How would you describe the way typography is being taught in your institution? Is there any differentiation between the way print and screen-based typography is taught?
	Transition Questions	Current focus and concerns of typographic issues in education	3. What do you think are the critical issues surrounding typographic education at the moment? And in particular screen-based typography?

Table 9.1 Question Guide for the Educators' Session

Activity	Questions Category	Discussion Topic	Descriptions
Presentation: Framework explanation			*To describe in more detail the two key components of the framework, typographic aspects and the 3 new media principles.*
Discussion	Key Questions	Cross-media framework review	4. Are there any questions or issues that you need me to clarify from my presentation? 5. Refer to the handout: typographic aspects *(they show the description of the typographic aspects & knowledge categories– based on a communication rather than a skill model).* What are your comments or criticism based on: a. Typographic aspects b. Knowledge categories: division of principles and issues (historical, technology & application) c. Effectiveness in moving students beyond the print model
		Relevance of typographic framework for education & practice	6. How would you envisage using the framework for the benefit of your teaching? a. How might the framework be used in your teaching process? b. At which stage of your teaching process do you see it being used? c. If so, which element of the framework would you find most helpful and which element would you find least helpful?
		Typographic aspects	7. *The typographic aspects are based on the current educational model of learning form before function. However, results from the projects have indicated that the learning sequence of typography (especially screen-based typography) is more dependent on functionality rather than form.* Should the framework change the order of the categories to reflect the learning rather than the educational model?

Table 9.1 Question Guide for the Educators' Session (continued)

Activity	Questions Category	Discussion Topic	Descriptions
			8. Going back to the critical issues that you identified earlier (in Q4), which of these issues are addressed by this framework?
	Ending Questions		9. *I wanted you to evaluate how successful the framework was in delivering an integrated cross-media model of typography. I wanted to know how to improve the framework and how educators (as well as practitioners) might use it.* Is there anything else about the purpose and features of the framework that you would like to comment on and did not get a chance to say?

Table 9.1 Question Guide for the Educators' Session (continued)

9.3 Peer Review Question Guide: Practitioners

Activity	Questions Category	Discussion Topic	Descriptions
Introduction			*Introduction, housekeeping issues like length, facilities, and refreshments.* *Practical issues: recording, confidentiality and setting rules of discussion.* *Setting the research context and detailing the objectives of the session.*
Terms Definition			*Providing definitions of:* • Typography • Screen-based media • Screen-based typography • Typographic knowledge • Typographic skill
Discussion	Opening questions	Experience working across media	1. Please complete these sentences • What I like best about the current usage of typography for screen-based media is... • What I like least about the current usage of typography for screen-based media is... • The main difference between designing with typography in print and screen is... • The main similarity in designing with typography in print and screen is... • The differences in the skills required for print and screen-based typography are...
	Transition Questions	Current focus and concerns of typographic issues in industry	2. How would you rate the level of typographic knowledge of recent graduates? In your company, would new graduates or staff receive any additional formal training in typography or any other design skills? 3. What do you think are the critical issues surrounding typographic practice at the moment? And in particular screen-based typography. Write them down using the post-it notes. Can we prioritize them?

Table 9.2 Question Guide for the Practitioners' Session

Activity	Questions Category	Discussion Topic	Descriptions
Presentation: Framework explanation			*To describe in more detail the two key components of the framework, typographic aspects and the 3 new media principles.*
Discussion	Key Questions	Cross-media framework review	4. Are there any questions or issues that you need me to clarify from my presentation? 5. *Refer to the handout: typographic aspects (they show the description of the typographic aspects & knowledge categories– based on a communication rather than a skill model).* What are your comments or criticism based on: a. Typographic aspects b. Knowledge categories: division of principles and issues (historical, technology & application) division of principles and issues (historical, technology & application c. Effectiveness in moving students beyond the print model?
		Relevance of typographic framework for designers	6. In your practice, do you currently use any tool or methodology during your design process? For e.g. do you go through a set series of steps (stage and gate) before, during and after your project? If yes, can you briefly describe it to us? 7. Look at the handout of the design process. Can you identify potential tools derived from the framework and at which stage of the design process it might be used? - Write it down in the sheet - Please share it with everyone - Are there any other uses, which is not covered in the design process given?
		Typographic aspects	8. *The typographic aspects are based on the current educational model of learning form before function. However, results from the projects have indicated that the learning sequence of typography (especially screen-based typography) is more dependent on functionality rather than form.* Should the framework change the order of the categories to reflect the learning rather than the educational model?

Table 9.2 Question Guide for the Practitioners' Session (continued)

Activity	Questions Category	Discussion Topic	Descriptions
			9. Going back to the critical issues that you identified earlier (in Q4), which of these issues are addressed by this framework?
	Ending Questions		10. I wanted you to evaluate how successful the framework was in delivering an integrated cross-media model of typography. I wanted to know how to improve the framework and how practitioners (as well as educators) might use it. Is there anything else about the purpose and features of the framework that you would like to comment on and did not get a chance to say?

Table 9.2 Question guide for the Practitioners' Session (continued)

9.4 Peer Review Transcript: Educator Group

This is the full transcript of the peer review session conducted with the educator group.

Event	Education Peer Review Session
Date	7.06.05
Time	6-8.30pm
Location	Southampton Row, Central Saint Martins School of Art and Design
Participants	Gulizar Cepoglu (GC) Finola Gaynor (FG) Gerry Leonidas (GL) Kelvyn Smith (KS) Stuart Henley (SH) Andy Haslam (AH)
Moderator	Joyce Yee (JY)
Legend	Words in italics are a summary of discussion in instances where the content is not considered key data, as well as annotation to provide a fuller description of the session.

JY began the session by going through the introduction text, timing, recording device, report summary and confidential statement. KS enquired who the reviewers are, which prompts introductions. JY then proceeded to hand out the definition sheet. She explained that the purpose of the introductory questions was to get everyone warmed up and thinking about the subject. She clarified the reviewers' tasks. They needed to complete each statement in turn and pass them to other reviewers. If their first choice has been written down, they were encouraged to write down their second or third choice.

GL: Are you asking for differences between two things or one?

JY: Two things.

GL: So, differences between teaching typography for screen or for print?

JY: Differences, comparing the two media.

GL: What are the common elements teaching typography?

JY: No, 'what are the differences?'

GL: Ok

Some confusion and discussion regarding the difference between Statement 5 and Statement 6.

GL: And the context is about what you teach in screen and what you teach in print?

JY: Yes.

GL: How much time do you have? (Jokingly)

JY reminded the group that the statements were meant as a warm up and to bring up subjective comments. SH joined the discussion at this stage. JY introduced him to the group and updated him on what the others have been working on.

Once the reviewers have completed the statements, JY instructed the reviewers to select and read one statement and if possible to summarise the main points. This informed the reviewers of the main points and gave an opportunity for reviewers to comment.

GC read out the first statement: 'The thing I like best about screen-based typography is'...

- The combination of limited choices and designing for flexible, unpredictable configurations.
- It's illumination – 72dpi
- CSS
- The ability to manipulate it on the screen freely in terms of size or colour and/or layering (negative positive) all the capabilities that once was cumbersome, technical and time consuming. Limitations: in terms of fonts and trying to get them printed in different outputs.
- There is no difference between type and image for screen-based media, even in terms of technological developments i.e. Postscripts.

GL: I like limitations, because it focuses your attention on maximising what you can do with a limited set of tools. If you have an extremely wide palette of tools, then getting to grips with the values of the parameters is an exercise in itself. Since this is in the context of teaching, I see this very often with the students when they think that not very much is possible with type. You just hit return and you get a vertical space. Then when they realize that this is not what you should do, as space is a flexible attribute: they exist on it's own and have behavioural aspects attached to it. The students flounder, until they get some confidence and understand how to use it.

KS: It comes back to the statement that I made, to continue Gulizar's comment regarding the limitation of 72dpi.

The pixel & typeface limitations are compared with the limitation of the letterpress. FG agreed with KS that these limitations are positive. Further discussions about monitor resolution and how it has always been assumed to be 72dpi. However, new screens are more likely to be 96dpi. The reviewers continued to discuss about the difference between CRT and flat screen and the quality of the image. One of the reviewers realised that he was straying off the subject and apologises. GC asked what the term 'CSS' means. FG explained that they are style sheets for HTML pages. GL added that a CSS style sheet is a method to separate content with appearance.

KS read out Statement 2: 'What I like the least about screen-based typography is...'

- The tendency to over-simplify: structure, hierarchy and sequence (relates to the default settings in design software).
- The lack of design control – reader can adjust and output into screen, mobile etc.
- No dislikes generally. Each case needs to be valued in or within its own context.

FG clarified that the second statement is not meant to sound autocratic. KS has no generic dislike and commented that each case needed to be evaluated in context. He has no experience in the application of screen-based typography; hence he feels he was not in a position to comment on it. He emphasised that the statements and answers were very subjective.

KS asked GL if designers are oversimplifying in relation to screen-based work.

GL: I would separate design as a generation problem and essentially it translate into when they went into school with graphical user interfaces. I started working in the mid eighties. At that time we were working in WordPerfect 5.1 and no one I knew would trust computers. We knew they were fickle, not trust worthy things and they were not very good at translating your intentions without adding some sort of voice. It might have had something to do with units of measurement or approaches to divisions. For example, if you are to start a new document in In Design, it will ask you how many columns you require and they will automatically assume that the columns are of equal width. It sidesteps the problem that comes before - do you want your columns to be of equal width? If I am sketching by hand, I will think to make my columns equal widths. So there is an implicit decision there, that has been made by someone but it is not revealed to me. Because I don't trust it, every time I get a dialog window, I will asked myself what is it trying to hide from me. People who have grown up with this design interface, tends to trust the computer more, because it's nice and shiny, and when you copy files the icons fly around and the computer talks to you. So you are not aware that the software is doing things to your process and design approaches. I see it a lot with students; they tend to trust the computer's range of choices to be the only ones available to them. So for e.g. a tool that allows me to define widths, and you click

and up come the little pop-up window. For the first two years at least, my students' will use rule that have 1,2, 3pt, 0.5 or 0.25 thicknesses. No one will give me 0.15 rules or 0.6, 0.7 because it is not set in the default setting.

KS: So, it is not a problem of oversimplification and more about the default settings?

GL: It has to do with the software suggesting choices or steps.

KS: *(Inaudible)*

GL: The engine in the software does not have this limitation. You can access and define it.

FG: But you can change the default settings. *(KS and GC agrees)*

GL: You can change it because you know that you can. You know that you want the line to be 0.15pt, because anything less will not be printed on a letterpress. However, my 2nd year students will never understand this.

FG: Because they don't know the previous technologies.

GL: It's not about technologies.

FG: *(interrupts)* Yes, it is.

GL: It's first deciding what you want to achieve and using the computer as a tool to apply this. However, students would be integrating their design decision through the options of the computer.

FG: So is that the fault of the software or the tutor?

KS: It's not anybody's fault.

GL: No, it's the fault of secondary school, but that is a different discussion.

FG: I don't think that they do.

GL: If I'm printing on a letterpress and I want a little more space between my columns and headlines, I can even get a little bit of paper and stick it between the lines, to get the exact space that I want. It maps onto our natural experiences.

FG: But if you haven't got enough lead, you can't.

GL: I don't need lead; I can fold this paper and stick it in between the lines.

FG: We should be educating our students that these increments are movable.

GL: Yes, and in my experience these are pretty easy decisions to make which take a disproportionate amount of time because people are conditioned in their early experiences of computers, through primary and secondary school, of trusting the computer to afford them all the choices they need.

GC: But don't they take the old model and apply it to the new one?

GL: No they don't necessary do that...

KS interrupt the discussion and said that GL had answered his questions and has clarified what he meant by his statement.

JY asked Stuart to read out Statement 3: 'The easiest part in designing for screen-based media is:'

- Readability in output context
- Electricity
- Time-based features
- Interactivity (transactional factors)
- Formal limitations

'Readability and output context' – FG clarified this statement – it's about understanding the context of the output and how that would affect the readability and the requirements of the end user. It is not about the physical screen but more in understanding the differences between media attributes.

Time-based factors – interactivity, transactional factors and format limitations. GL clarified that the first 2 points can be grouped into one and explained that as a user is interacting with the document; it can change its format, unlike a paper version.

GL read out Statement 4 – 'The main similarity teaching print and screen is...'

- Clarity
- The type form (anatomy of type) and the same rules in terms of spacing (leading, tracking, kerning etc)
- Visual strategy – narrative
- Designing for users (using?)

FG read out the last statement - 'The differences requires for screen and print are..."

- Seeing and understanding not just looking
- One is on paper, physical mark making and the other is more abstract (numerical) requires a good understanding of the previous to apply in a different environment.
- None
- Varied

GL stated that there were no differences and FG disagreed with his statement. Her experience of learning typography through the traditional route and continuing on to a post-graduate degree in electronic media, she noticed a huge difference in the way typography is learnt or taught for screen. (GC agrees). These differences tended to be ignored by elitist typographers. KS enquired what they are.

FG: It's really hard to define. One is the user experience, reading a book, a piece of newspaper or print. I appreciate the psychology of readability on these different modes of output. I like to call them output. But the screen is very much more intimate. You will never design things for the screen like you would for the book.

GL: Why do you say that?

FG: And the mobile... Because it just wouldn't work from a user's experience point of view.

(GC said something inaudible in the background.)

GL: I've seen 200dpi screens from Microsoft and they are completely identical to paper.

FG: *(Interrupting)* It's not the same. No way it's the same. If they do the eye tracking test which Linda (Reynolds) does in Reading, eye movements on print is not the same way as eye movements on screen, because you have external environmental issues which changes the way you read something in that context.

GL: Not necessary. It is not widely available yet but it will soon make the rendered object indistinguishable. You can get E- paper from Xerox that looks exactly like this (referring to a paper) and has 600dpi. It's expensive, yes. I think the only difference is the transactional aspects, the fact that one has interactivity, that the document changes depending on what you do across time.

FG: Yes, but a dictionary has been interactive for years.

GL: No.

FG: Well, the narrative is what I mean; interactivity is only a pre-described amount of content.

GL: Not necessarily.

FG: Something is only interactive based on the database that is driving it or the content of database, in the same way that a dictionary is based on the content that is held within that.

AH: Interactivity isn't a fixed position.

FG: Sorry? *(Not hearing)*

AH: I slightly disagree. I don't think interactivity is a fixed position.

FG: But it can only be whatever content is applied.

AH: No, but you have user groups where the users themselves are building content.

FG: Ok. That's a fair point.

AH: It's not another way at looking at a dictionary. It's an additive experience rather and a reductive one.

FG: Yes...but *(both AH and FG talking at the same time, making it inaudible)*

AH: But that what's most website are based on.

GC: Can I just add something? I agree that they are huge differences. First of all, there is screen thinking, which is completely different. There is lot of theory especially in French that is written about it. And in fact there is a difference on paper, where you make a mark on it unlike screen there is no different in sign. That is a huge difference.

GL: Ok, question - which of us here, Joyce excluded, has a degree in designing for the screen and teaches in designing for the screen and it is a post-graduate? Meaning, your formative skill was not develop for that medium.

GC: *(Interrupting)* It doesn't matter!

AH: That a *(inaudible)* generation *(inaudible)* question.

GL: I started doing by doing type casting.

FG & GC: So did I.

GC: You said that your students didn't have the courtesy of increments. So you accept that there is such a thing as 'screen thinking'.

GL: Yes: *...(quite heated discussion between GC & GL)*

GL: This 'screen thinking' needs to be defined. What I'm saying that it is not a black art. It is something that can be entirely developed either through some sort of reflection or through some models that you can developed or through being taught. And it's no great thing. If you are actually a designer, you can actually develop this set of skill that will enable you to design for the screen.

AH: One of the things that occur to me is that one set of skills come from typography but interactivity poses another set of conceptual skills about navigation which can be difficult to comprehend *(inaudible)* such as hypertext. Beyond that, there is another set of skills which has been taught in film school which is what I would call the 'grammar of film', which most typographic students are unfamiliar with.

GL: Ok.

AH: It has to do with shots, cuts and the relationship between sound and film. So a web page which has a scroll bar clearly has very little to do with film but any piece of motion graphics that you read off screen, for example film credits, is just a typographic piece with a picture that moves behind it.

GL: Yes...

AH: But when it actually gets down to engaging with moving typography, then it becomes, that the typographer is working with a knowledge of letters and borrowing the grammar of film. So you've got 'cut', you've got 'edit' in how type comes onto the screen, the way it fades out of the screen. And that landscape of knowledge, traditionally when you and I were at college, we had friends who were in film school...

GL: Hmm, yes

AH: ...who were doing things, I had a friend who could call the cut just before the cut on the screen was made because he was used to the grammar of film. So we come to new media, as THE PAGE, there's a whole field, which is the grammar of film and photography that we are unfamiliar with. For instance, you can make a typeface 'out of focus'; the fact that it is called out of focus is a photographic term and nothing to do with letterpress. This gift is from film. And we as designers who will design on screen and who will be responsible for teaching design must be teaching typography which embraces the grammar of film. That's my thought. And that's one possibility. And the second is that navigation structures are different. Navigation structure built for books and printed matter are clearly different from the navigation structure, which are grown out of experienced user base.

FG: That's why I was talking about narrative.

GL: What it is there to stop anyone, like us who didn't get the formal training to develop the skills to practice this?

AH: That's fine, but in terms of Joyce's building a model in attempting to define a framework for what we could be teaching, I don't necessary think that we move from those skills. We ourselves...most of us are probably self-taught. I taught myself Quark Xpress. But it's that process that we have gone through which we are now responsible for, in the way we are delivering our curriculum.

KS: Can I just add to that... the jump from a traditional background to electronics was an enormous one because of these differences?

FG: It was a major jump.

KS: With these differences, you could see why.

FG: Yeah, it's just that I had a really good teacher in interactivity.

KS: But some people find it much more difficult to make that jump.

GL: But if you are designing forms for example, this is print-based typography at its most boring, and actually you can never get the user to be happy.

GC: I think it's debatable if it's boring...(laughter in the background)

GL: I like it, but in a sense it is the same in application of steps, of timing...

FG: It's not the same.

AH: Some words of sequence are used but in the way you articulate the sequence in the page is different from the variety of cuts you can make in a film.

GL: The granularity of units of measurement is more important than the steps.

AH: It could be call 'focus', that's a phrase that means make something in focus and something out of focus. It's a vocabulary that does not exist.

GC: You can transport it, but I was going to ask you when you said 'grammar of film', that it is closely linked to technology.

AH: So is typography.

GC: Exactly, but that changes...we need to teach postscript.

KS: We need to teach grammar. Not technology.

A discussion amongst KS, FG and GC about the current experience of students, who are more likely to watch films than to read books.

AH: Have we been forced to address a broader curriculum, is that the issue? Some of the home truths about typography that we have been talking about remain the same, but perhaps there is an additionally vocabulary that needs to be included.

JY: I think that hasn't changed.

AH: The basic vocabulary?

JY: Yes, it hasn't changed. Because we felt we can make do.

KS: You had to adapt, (inaudible)

FG: It's learning how to learn.

AH: Is there another set of ideas that perhaps we have not been taught? Nobody ever taught me reading as a process; typography was just something you did with letters in a letterpress room if you weren't good in drawing. I think those kinds of issues like reading and semiotics which students are beginning to explore at PG level are important.

KS: Nor at UG level. Designers do not read.

AH: The vocabulary of the broader issues aren't discussed very much, not much about reading distance or the practicalities of how we learn to read, the relationship between speech and word.

FG: Of course it's changing now.

AH talked about the importance of reading for designers and typography. It's become fashionable to discuss at UG level.

AH: But in a lot of old-fashioned places, they are not very adventurous at teaching typography and are not addressing the grammar of film or the reading process. In a more enlightened world, they probably ought to.

GL: This points to a major problem in design, in that it is extremely disciplinary, where you cannot just learn some part of film studies. We haven't talked about history of art which should be there, right? We haven't talked about how technology influences our thinking. We don't have a module for film studies because our university says that we can't have a 4-year BA course, so we have to leave things out. So what you are battling against is a wall full of pigeonhole with bits of nice subjects people would like to bring in but you have to make it fit into to a 3-year course. What you are left with is survival of the fittest. You need to get them to be able to set type first, film studies are an optional thing. That for me is the major problem.

FG: It's just management within an educational environment.

GL: Design by its nature forces its practitioner to touch on very different things. For e.g. editing the content, a good designer is also an editor, a proof-reader, someone who actually understands the language. So I would want to have someone from the English department to come and conduct some session. That's your problem there. Do you create an elephant of a framework that includes everything that we think of and is completely unusable? Or do you start cutting bits out of a model that people can apply?

KS: Going back to the analogy of limitations. How can you teach a course which has a series of limitations? >>> It is actually interesting to pair down the course to it absolute minimum. It can be an advantage.

GL: It can.

Discussion about the advantage of limitations to help focus choices.

AH: You have actually introduced the idea of order. So Joyce is developing a kind of model of an overview.

JY: Which I would like to show you next...

AH: But the actually order in the way that is taught, now I think you don't need to teach it from the basic, I think you can start from anywhere! You can go in any direction. And actually if you teach with passion, they will pick it up anyway. When I moved from the MA here (in CSM) to teach in LCP for a year, I applied a PG project for the 1st year UG, and they did extraordinary well. (Laughter) It was joyous. Sometimes we want to sort out the stuff because it reinforces the

prejudice we already have and so we impose on students rather than let them discover for themselves.

KS: Can I just make an addition to that, when I arrived in the LCP and took over when Andy left, it was a real mess! (Laughter from AH). Andy was teaching final year stuff in 1st year. It's all about headspaces – definitely Andy's language like the 'oral tradition'. So what I found was the remnants of it. Seemed to be back to front. What I learnt from it and from the staff was actually you can swap all these things around. I was fixed that you should teach this first, then do that, then do that etc. So it's a bit of a revelation for me. You could actually do parallel things, rather than trying to separate things out.

JY interrupts the discussion to begin the second part - to present her framework. She asked the reviewers to respond first to two main questions – what are their views on the overall structure and content of the framework and how well it could be translated into a teaching tool.

GL: I have a problem with the word 'genre'. There's the genre of magazines for men or there's a genre of women's fashion magazine. It's a category of documents. This is typographic 'modes' or something else. It has something to do with aspects of a group. If I was your external examiner and you have a thesis with the word 'genre' in it, I would crucify you. Because it should have been picked up.

JY: OK

GL: These are not genres; they are facets of communication bits.

FG: Division of one whole.

GL: Yes, because along the horizontal, there is unity, these are not separate.

GC: Yes *(agrees)*

JY: Do you see genres as separation?

GL: Yes. So you need something else that implies that they are separate but also something implying horizontal unity.

JY: Can you suggest any suitable term?

GL: Hmm *(paused)* – I was just recalling words that I have seen, could be 'configurations', 'aspects', 'modes'. Depends on when the papers were written. "Modes' were big in the 70s. I also have an issue with typography representing written language. This is a linguist interpretation.

FG: Sorry what is that?

GL: Typography does not represent written language. Written language is mostly 1-d. As designers of documents our job is to add value beyond the 1-d.

JY: But at its most fundamental value, it is just text.

GL: It is very much not that. I don't think you can separate that. I cannot take a document with its hierarchy and translate that into prose. I cannot take a map and translate into linear prose. I don't think it can escape that.

JY: But what is typography without language?

GL: That is not the question. The question is does your framework try to define a set of knowledge objects; a limited set of parameters with an associated set of values the parameters can take, that relate to typographic practice.

FG: But don't you think it's related to the content genre?

GL: Yes.

FG: And what you are discussing is the meaning and the content.

GL: But there is this bit *(pointing to 'text' genre)* that says 'text heading', 'captions' and 'signage'. So actually this is quite wide and there is a lot of stuff that goes there that when you start showing examples, it migrates into cells into the right and left. And when you start showing your examples, you can see a piece by Fella, which I can very easily see in other cells as well. And I think you would be running into problems common to classification when trying to define too clearly relatively narrow areas. And then when activity produces something that doesn't really fit your definition then perhaps you have to make an exception or find another way of describing it. So I think you need to try to be more descriptive in the content part. Try to make it more... Let me put it another way, what I most perceive as typographic practice is in the 'content' group. 'Form' for me is just fine art and I don't care very much for it. The bit where I design stuff that

relates to user's needs and have some sort of test in qualitative review process. Meaning is all the other bits that we want to bring it, all that we have been talking about, like film studies, history of art, all that belongs to meaning. And you can bring that into the context. I think there is a lot of stuff relating to the traditional print-based typographic knowledge, which will fall squarely into content. If you read James Hartley – 'Design of instructional text', most of what he writes about belongs to 'content'.

AH: You've use the word 'written' to differentiate between spoken language. Is that the reason for you to use the word rather than 'spoken'?

JY: Yes, I wanted that distinction.

AH: Typography can be to a taken as spoken language as well.

KS: Isn't that in 'form'? Are we capitalizing that in form? *(Inaudible)*

JY: To create 'non-representative form, detached from its linguistic role' *(reading from the screen).*

AH: It's playing with letter shape.

JY: Yes, it's playing with letter shape, using something in its abstract form.

AH: You need something in context. I agree with Gerry, it doesn't seem to flow in its naming systems. It's got 2 elements, the phonetic element and the ideographic element. The phonetic elements are letters that represents sounds and a combination of syllables. And the ideographic elements are punctuation and spacing. It doesn't have a meaning, it has an abstract form but it is an agreed meaning, which we bring to it through knowledge. So it is actually a symbol, even the space is a symbol... punctuation, parenthesis, brackets, other paraphernalia. Typography has two notational codes trapped within one. Within the phonetic code, the spoken gesture is trapped within it. As a result, the ideographic code used to represent the spoken code, which is the whole justification for punctuation and indenting paragraphs. I don't think your definition has included any of that as a notation system. I think you need to strengthen that.

GL: Take for example 'Signage' – anything that help me find my way to the toilets here or at the airport has so many dimensions about interacting with the environment sequence, time-based, architecture, you name it, it's there. However by putting a description 'to represent written

language' and then have another bullet point that says 'legible sequence of word' completely narrows the definition.

JY: Yes.

GL: I can see having someone in film studies walking with me in Heathrow explaining to me the cinematic experience of my interaction with Bembo Bold on yellow. Then the 'legible sequence of words' is a very poor descriptor of this massive interaction.

JY: Is that misleading then? Or just that just narrows everything down?

GL: It narrows everything down, I can talk about typography at the level of just putting contrast on other bits of substrate and you can say I'm putting bits of meaning, not going to your 3rd column but actually the bit in your 2nd column, different from your 1st column in actually carrying meaning and its meaning that can be reviewed in its effectiveness, tested, can be confirmed, compared and so on. That is something very important through typography. It is the transmission of meaning through text, through textual configuration and it might have bits that have phonetic value or non-phonetic value, agreed meaning that carry meaning for a specific user context. That is much wider, and I'm sure I can give it a better definition if I have more time to think about it. But I think you are not doing justice to it.

AH: I also wrote down, I don't know if it fits under 'meaning' or 'content', which is picking up on what Gerry said. Typography seemed to me to have 'documentation', 'analysis', 'concept' and 'expression'. All 4 words that are almost starting points for a student but actually words you can use to describing something like a timetable. It has documentation, doesn't have much free expression, and has formal expression. A strap line for advertising has concept, some free expression. Most of Why Not's work has a lot of expression and its concept is a good deal of fun. Those kinds of definitions of 'documentation', 'analysis', 'concept' and 'expression' somehow seem to struggle with your groupings of 'meaning' and 'content' - they are not reference in either of the columns. I don't know how you get them in, I don't know if they should remain that way. It strikes me that most typographers built up some form of analytical thinking, you almost have it, and you can't just live at the end of a pencil as some illustrators do. Typography is something you have to organise with. You also deal with content, so you will have documentation, because you are dealing with putting down information. Often there is a concept but is not always ideas in graphic, there is a concept. And in the freest elements, there is either a formal expression or a free spirited expression. Typography articulates those 4 spaces. I don't know how you would get them

into your...because none of the four words formally appear in your columns and yet they are part of the plot.

GC asked AH what he meant by the word 'free expression'. He gave the example of David Carson. Expression is generally applied in the early part of a student learning while documentation and analysis skills are acquired later on.

AH: Those kind of words seemed much more fundamental to me than what Gerry was talking about in terms of legible sequence of words. It looks like it has been left on and typography has 25 other things that it does (pointing to the 2nd column and the description in it) at that level. It has been elevated beyond its status, it's not to say that typography does not do that but if you were going to put that in, why not 150 other things that it does as well?

KS: So there is quite a difficult boundary between 'content' and 'meaning'.

AH: There is.

JY: That is one of the difficulties I encountered when trying to formulate categories - they are not hard categories, and I don't expect them to be. In the diagram itself, I have shown that it is incremental. So you have 'form', and then 'content' building onto it, layers rather than a sequence.

KS: Don't you think that you are forcing the categories into two things that cannot be separated? Is it 'content AND meaning'?

JY: It possibly could be grouped. It could end up being 2 groupings.

AH: Is 'form' really referring to letterforms rather than typeforms? It's playing about with letters is what I'm saying.

JY: Yes.

AH: So that's about letterforms. But there is 'form' within 'content' and the way you arrange typographic elements. There should be more content in 'content'. There are forms in typography, the words 'signage', 'caption' they are words, they are categories we deal with all the time.

GL: I wouldn't have them there at all. You need something that describes the range of stuff we do, and 'content' is part of the game. Things that you present at an equivalent level must be equivalently complicated. Signage is massive beast; 'text in heading' and 'caption' is small bits at the same level. So you are mixing things. And I'm beginning to have a problem with your sequence. Because your diagram at the top (referring to the hexagon diagram), context to form, from general to specific which is a way we act as practitioners. However, down at the bottom (referring to the table) you are going from form to context, from the specific to the general. And it seems that general context or the wider assumptions follow on from the specifics, rather than actually following on from the environment within the specifics. How would you rewrite this if you have Context first, then Meaning, then Content then Form?

JY: That actually brings up one of the key issue I have when I was developing the framework, trying to put in a semi-sequential manner. It was derived from an educational model, for e.g. as a student you will start to learn type from the letterform, then move towards a more complicated usage of type in paragraphs, pages, books, and then selecting typefaces, what their historical and cultural associations are and then to context where they can start playing with the form of the book etc. What I found out from my student projects was that they generally only operated within 'content' and 'meaning', at a 2nd year level, some of the better projects was operating at the contextual level. But it wasn't as sequential as I envisage it to be. The learning model is very different from the educational model.

GL: I may have missed this in the initial description of the project, but who is this for?

KS: What is the intention of this project?

GL: Is this for us to discuss? Or is this to take it and adapt in your teaching programme?

JY: Well, I was quite greedy. I wanted it for both educators and practitioners. But it was developed within an educational context and has been run and tested in an educational environment. What I would like to do, which is why I am having a session with designers is to find out how they might adapt it, however it has a long way to go before being ready for practitioner use. For educators, there is still a further level of adaptation and refinement- that's another question, how do you see it being used? Could it be a curriculum guide?

GL: There is 3 very different worlds: there are the academic environment where you might discuss things, apply things, where they discuss things at an abstract high level; or the practitioner who would think of actually doing things and has some body of experience to rely on; and the students

who is building knowledge. And I think you are casting you net far too wide. I don't think you can describe this thing for every body within a PhD of 80,000 words.

JY: No I'm not. I have drawn a line, specifically is in an educational context environment. The purpose of the peer reviews is to hear further recommendations for practitioners and the future development of the framework after the PhD. Personally it is important for me, as I want to see it applied in some form or manner in a practice-based, because I am a designer at heart.

KS: So what do you want them to do tomorrow? (Referring to the designers' session)

JY: Well, that's what I want them to comment on. In its form, it is very educational based.

KS: Isn't it purely educational based?

JY: At the moment, yes. It has not been put into design practice.

KS: How do you think they would be able to make comments as practitioners?

JY: I don't know. I ran pilot tests with some designers and they could see the usage of it as design process tool that they use or they can use it as a pitching tool, as a communication tool that informs the client of their own design process.

KS: As a structure?

JY: Yes, a structure. These are some of things that I would never thought about, these are great ideas, although of course needs to be a lot of work done to adapt what I have, to a quick and easy tool for a practitioner. It gives me an inkling of where people could see it going, what might be useful to them.

GL: A very concise set of list or dependencies is probably the most you can get for practitioners, who had things to do yesterday or somebody shouting out to get it done, and they won't have time to enter into a discursive modes for this. So I'm probably quite careful in separating this, and if I were your supervisor, anything that you say relating to practitioners, I would say 'user testing'. You need to make your models, roll it out and have reviews with them. It's quite another scale from what you are doing right now. I think it's much easier to get value out of this kind of thing from an educational environment where you can find some balance between something to be applied within an educational program and can be discussed more generally by educators. So this

would be the first thing that I would ditch. Do it for your post-doc or something. Think of yourself as a practitioner – how much time do you spend thinking about the general aspect and implication of a system like this when you are designing a document yourself? There is a lot of stuff happening extremely rapidly not very precisely in your head that falls into the pigeonholes. You are not making some explicit process or making an observation. It just happens very quickly and that is part of the experience. So externalising it for practitioners would be very tricky.

KS: Very. Can I make a comment about the hexagon?

JY: Yes you may.

KS: I think that form; the hexagon itself becomes quite interesting. It's got that 3-d quality in that it is laid on top of things. And I think that diagram (pointing to the hexagon diagram) has so much more potential than your left to right (matrix). And I would look at developing that as the actual piece of work, as a starting point, where the form sits in the centre, then the meaning, etc. I think there is much more depth in that than some of the things from left to right.

FG: I think you need a new diagram *(drawing a Venn diagram).*

JY: Is it to do with that I had to put it in some sort of sequence, left to right, top to bottom?

KS: I think it is. You are using a print-based narrative.

FG: Yes, exactly.

GL: This is the discussion we should be having – how does the tool of presentation, which suits a 2d matrix, influence your design model?

KS: It influences a lot of things. I think you sort of got it in there *(pointing to the hex diagram)* but I think the solution is possibly in there.

AH: I agree. I think the model, the tabular model is not quite right for presenting material. There are certain changes presenting within it. Now as Kelvyn suggested, the 3d model or perhaps a circular model, like the Bauhaus model...

KS: That's fantastic!

AD: It's a fantastic model and coming back to it, I think it is quite descriptive, it also circular. Going back to the shape, if it's round, it doesn't matter where you start, which is also quite interesting.

FG: *(In the background)* Yes.

JY: Yes, which is what I had problem with as well, trying to decide if 'form' should start first, or 'content'.

KS: It doesn't matter.

JY: I think it depends on the level of knowledge that a student has and it's about emphasising, one is emphasised more, one less. And that's what I have discussed with other people as well. I need to map out emphasis based on time, based on learning.

AH: Yes *(in the background).* Isn't that also about the nature of the job? If you do set the students a job like designing a railway time-table, unless they do it really radically and not just go wild and expressively like the Saint Martins students, but instead look closely at analysis and documentation. They have to understand figures, they would probably find out that all numerals have the same width, or otherwise they won't fit. So little things occur, basically what is taught in that project is analysis. But if you take a project, which asked them to visualise a radio, then suddenly a whole different gambit of activity is taken onboard because the nature of the brief is different. So what they have to pull towards them are different sets of typographic skills. And they are a bit like a Venn diagram. Some of them are really big, and some of the skills, certain knowledge of little bits are really important.

KS: Coming back to the previous point I made, about Andy's course, these things together, whether they are like that, or like that (showing different configurations) - they are moving in parallel, which I think is such an interesting thing. In a 3d structure, you could see loads of possibilities.

AH: I think it's possible to come through the hedge backwards. In education, there is a terrible temptation that we are forced into units of delivery, that's about the delivery mechanism. It's actually about teaching strategy, what do you actually deliver to students? Students will learn independently whether you teach them or not, so the other way of talking and looking at it is to hook on to what they learn. If you think 'I'm going to talk to them about it', if you sound out,

guessed so that you are 1 stage ahead, by anticipating and listening intently. If you are talking to a group of 16 year olds, allow them to talk to you with what they are interested in and then use their language to talk about typography, go with the flow, this is really 60s teaching and very unfashionable. They would produce typography and then you come back in with the agenda which is the curriculum, but if you start out with the formal subject, you lose them because these 16 year olds won' be interested. In the MA, we teach in a different way, so I don't think it's always about delivery and curriculum – it's about teaching strategy in relation to learning. And that's a very different thing; there are models that people have been discussing in secondary schools that we are not discussing in HE about models of learning. How do people learn things, how do they enjoy kinetic typography through letterpress, and people who learn through book learning and people who learn through rigorous absorption of oral language. And yet when I first started to teach, I worried about proper delivery, otherwise it's all going to fall apart. And it doesn't, it actually doesn't. It's about confidence and the relationship between students. And I think sometimes models like this, which is based on the analysis of the content, lose sight of the teaching reality and only register when you start to teach. And I wonder if there is a way, if as you describe now your PhD is very much about education, from what Gerry is saying, the other stuff goes on later with a practice model, then surely some of things need to link more closely to learning experience. And I don't want to force you away from the tabular matrix, but something in the round, 3d has more possibilities.

KS: I think you should force her into it.

GL: This *(pointing to the tabular matrix)* suggests a sequence, which presents a hierarchy of doing things, which is very much not the case. If you use some variant of the model on the top, you can actually design, or I'm 1st year, I go into the model at this level; I'm 3rd year or 4th year.

KS: That's what Andy and I were talking about the entry point, how to..

FG: But that's about complexity isn't it?

AH: It's complexity, yes.

KS: Because if this is a flat surface, and you enter at there, and there, rather than leaving it to educators.

FG/GC/AH: yeah *(in the background)*

AH: The assumption of formalised education, is that you will pass in the order of learning, exactly of how it was taught to the learner. I absorb things that people taught me passionately, in what they believe in and suddenly that started becoming interesting.

GL: It's a massive problem, now. Because I've had this with my MA program where I wanted to get a field trip into the course, as part of the program, so the students pay a bit more at the outset, and in terms of those who get funding, get funding for it. The university said that the field trips must have independently assessable learning outcomes and I think it's nonsense, because actually its contextual studies, and is meant to inform their practice.

FG: It should be embedded. I've got exactly the same problem.

GL: The University thinks that you can attach specific bits of teaching with specific bits of examination.

FG: That's not from an education but from a quality aspect.

GL: Yes.

FG: That model without a lesson plan would be fantastic except that it would want to be proven by a learning outcome committee.

AH: Some generic unit descriptor.

KS: The problem is, Andy, your model is about you.

AH: Absolutely but most people's teaching styles are about themselves.

KS: Of course it is. And that's the problem with quality.

AH: You teach from where you are, not from the structure that you have made, that's what we do.
FG: That's the reality of what we do, we just ignore the unit descriptors.

AH: Yes, ignore the descriptors and teach the students what you want, and if you genuinely believe, they will learn.

(GL joked about not making this public – laugher all round)

AH: And then you mark on whose come closest to your assumption of the project. (Laughter all round)

More discussion about course assessment strategies.

AH: It has veered slightly off course, Joyce, but you have introduced the subject of education and you are speaking to educators, the other thought that I had was if you did introduce this model of current practice or is it a model of what it ought to be?

JY: I don't think it's a model of, I think it's a bit of both. The origin of it is on how we have taught but the idea of the framework is that these are the possibilities. These are perhaps what needs to be done in order to move the subject further into the idea of cross-media application.>>>

FG: But that model already exist, it doesn't matter whether you have been trained or not, I guarantee you any junior designers up the road >>>it's about designing well, that's what you are talking about.

AH: Do you think it is possible to suggest, because this looks like something that looks like the original mode of practice *(referring to the global principles)*, and this looks like *(local principles)* it's beginning to move towards the possibility of the future.

JY: Then there are also the 3 levels down.

AH: Yes, but because you separated screen media and print media, you created two camps already. Well that doesn't seem to be a very good model for the future. That seems like a model of the analysis of the present.

FG & KS agreed in the background.

KS: I think that diagram, going back to the diagram, there's something very much in why those 2 things are separated. Again, aren't they on top of one another?

JY: Or they are connected somehow, I do want them to be distinct.

AH: I don't know whether they are distinct. If it is a model of process, if we are honest, it does look like what you have described. But if it is where we could possible be going, and taking an old model and putting in a new one, and saying they are separate bits. I think what you need to do is to smash into those bits and create a completely new model that doesn't resemble that at all!

KS: Cause I really want to look at the old model first, before I even look at it.

JY: I think the old model itself consist of the existing model of knowledge with a part for screen knowledge bolted on.

AH: Yeah, but shouldn't it be a model, as Kelvyn suggested, a model that describes the present, and one past model where it talks about how to be an apprentice comp. And then there's the integrated model of the future, where we are now is this hybrid phase.

JY: So treating this as a transitional phase?

KS: Isn't that what you are looking now?

JY: I am looking at how we transit into the next phase.

FG: Isn't that incremental? Instead of an innovation leap?

JY: I don't really think they will be a leap of innovation.

AH: I think it will.

FG: Yeah, me too.

GL: Ok, is the value added to your work an expression of a new model of screen-based model that sits alongside and exist, with the current model? Or a completely new ground up model that perhaps encompasses the range of media some of which are print and to a very large extent screen?

JY: It's not a completely new model.

GL: Why not?

AH: I think it should be.

FG: I think you need to identify, there's 3 things that happens across the model of every design: editing, manipulation and creation. These are subject specific. Everything else is transferable, scalable, cross-disciplinary. No matter what subject we do, fashion design, broadcasting, editing.

JY: Editing, manipulation within graphic design?

FG: No, no, subject specific within all those areas but you also got bearing on huge transferable skills, contextual skills that are global rather than local, rather than subject specific. So that could change the model on how you merge the output. Design is design, it's just different outputs we use, and that could be letterpress, screen design, a piece of interactive virtual pixel, it could be anything. It's about IP. We are teaching students how to develop intellectual property.

AH: I definitely think that you need to propose a more radical model, otherwise I can't see the value in doing it, for e.g. 'navigation'. Gerry's talked about signage, where you clearly got navigation on the web, on the page, how do you get your hands on the information, that's not something that we would formally offer as a unit, in a BA because it would be small.

FG: But you must do storytelling or narrative?

AH: It'll be a way at looking at the space, but then you could introduce units of increment, resolution, points of *(inaudible)*...

FG: Exactly.

AH: Not that it gives you order, but it gives you a very radical different approach, I think to me, a PhD level it's a bit tame if you are not dealing with that level of thinking.

GL: You built in an obsolescent – what your PhD will become unless you rethink your model as good evidence for future researchers of how people thought they could make some sense of new media at this point in time, oh look at how people are trying to fit it somewhere alongside something that already existed. Instead of thinking, actually we are doing design and perhaps we should re-evaluate the model from the ground up. We don't need a parallel model, we just need one, with extensions of plug-ins.

KS: The other thing that's going to be interesting is tomorrow's session because practitioners will have very different perspective from us, who are straggling between teaching design and actually doing design. A lot of this structure is out of the window and actually if you were teaching somebody to work in a design practice, you are not teaching contemporary design anymore. You're saying, what's the job, what the client's budget, how quick is it going to be, it's a totally different process. I'll be very interested to see how they respond to a very academic model, which we are probably used to.

GL: For the practitioner, you will not get the distinction between print and screen. It will be about some content and some possible configurations. It could be print or a set of configuration, print on my laser printer, print on a press, print on demand, PDA, mobile, Web TV, kiosk.

AH: Do we currently teach with the specifics as well identified, as we may like to think? I know we are increasingly encouraged to do that, you have to itemised objectives within briefs and all that. Some of us are better at doing that than others. Do we actually teach like that, or do we set interesting briefs and then see what the students could pull towards it and then from experience deliver critique, which we hope will be helpful? I rather suspect that I do and although I am fostering all things that the university wants about learning outcomes and things, it's not actually what I'm teaching.

KS: You are doing it in the context of your brief though.

AH: You do it in the context of your brief *(inaudible)*

KS: It's generic. That's the problem with it.

FG: It doesn't fit.

GL: That's also what you said at the outset of the *(inaudible)* curiosity, intellectual curiosity. You expect young people to be brimming with intellectual curiosity.

FG: But they don't *(laughter).*

GL: If you describe on a piece of paper, this is what you will be told today, this is what we expect to find out, everything, and everything. Everything is so precisely prescribed; there is no room for creativity, inventiveness or curiosity.

FG: What do you mean by that?

GC: To produce a radical model, you have to look at an area where you are not thinking in terms of, like in book design where I'm looking, the revolution is in the process, digital workflow, is totally on the screen. So when you design a book, you design completely on the screen. But at the back of your head, it's going to be printed. So it's not really designing on the screen, you are constantly thinking of the printed version of it.

FG: That's not to say that you can't develop a concept on paper, is it?

GC: But to do something radical in the model, then you really have to liberate yourself from the printed book version in order to produce something completely new in that manner.

FG: But that leant itself to the concept though, you wouldn't design a web-enabled project and a book in the same manner, you can come up with the same concept, being directly linked to cross-media project, but you would never design a book and design like a website, because the output is different.

GC: How can you integrate those two?

GL: The main thing that has changed in the design for screen and is increasingly being absorbed into print-based media, which should have been done from day 1, is people are no longer designer of forms, but designer of specifications. If it's print, you are a designer of a single specifications or one configuration, if it is some of this cross-media work, then you are a designer of multiple specification for a given content. That is something extremely difficult for students to grasped. They might be dealing with one book that might have different modes of output and css exemplifies this. Examples that we used are dictionaries. People think that Oxford produces many dictionaries. They only produce 1 dictionary. There is one database with every single definition in it and tags along side. And what people design is different specifications for behaviours and different appearance for the term. So the term *(inaudible)* has all the possible definitions from what you find in the OED to the school's learner's elementary dictionary, and one of them only appears with one specification. So this is the designer's role to identify modes of design specifications for content, for different output environment or scenarios.

FG: That's part of the design.

GC: So what do you identify?

GL: Designers design specification- for appearance of content, for behaviour of content. But what has changed very rapidly is that you don't design just one set of specification, and you also do not control the implementation of the specification very much. In print you generally have pretty much control of how the specification is implemented. Actually in the shift to digital work processes you loose control, because you don't have as good proofing stage as you did. You don't have the proofing stage in a digital workflow. You can't get an inkjet to give you true simulation on a CMYK press. You lose that for example, the ability to predict the fidelity of very fine graphic rules if you are proofing in a digital workflow, you cannot have the distinction between a 0.2 and a 0.1pt rule. When you move to a digital workflow and you have a DTP, you don't have anything that will give you a version similar to an actual printed press.

GC: As a designer, you don't get the proof but you visualise it.

FG: It's not the same.

GL: It never the same.

JY asked Stuart for his opinion, as he has not participated the whole time.

SH: Yes, I was listening and rather than participating. One thing that concerns me is, first it's something that is massively broad and you seem to want to contain the whole thing, which is meant for people's career. If this is going to be in the teaching area, you need to get more experience in the classroom. This is a beautiful looking model and I don't think we could take it all in or response as quickly *(inaudible).* But right now, in one year, I have 54 students who will dissect any words or sentence in an assignment that I give them, and I have no time to act like that. When I was first teaching, I would try to *(inaudible)* but now, when deadlines looms, that *(referring to the framework)* is not going to be applied. And what you do end up applying is your own teaching experience. You tend to just ignore all the rules - I've taught a few times, I know what I want, I know when somebody is digressing too far and I know when someone is doing interesting stuff because I see if often. And if that can be bottled and given to a new teacher, then you are on to something really interesting. I suspect there are a few models like this, so I think you need more experience in the classroom. So I don't know where you are in your PhD, at the start, the middle or the end?

JY: I'm nearing the end. I've had 3 classes using...it's obviously quite limited when I only had one semester with the students.

SH: One thing that concerns me is the lack of field-testing *(inaudible)*. You've never been out in the field; you don't know what happens when it rains, can it be dismantled and build it in the dark, in the cold. So that's the environment that we teach in. It's a totally flawed, un-idealistic world. And you have this beautiful, utopian, designer view of the world, if you map it all out, if we label it, if we make all this definition right, then it will be ok.

KS: So then you have a model of a government, rather than a government.

SH: Yeah *(laughing)*

FG: But would you want it like that anyway?

Everyone talking at the same time discussing the merits of an exact/realistic model.

SH: There are 2 types of knowledge – implicit and explicit. What you identified is explicit and implicit is what I know. It takes time. *(Inaudible)* You need to give it more field-testing.>>>

SH: Teaching is different from practicing graphic design.

AH: I think, I like what you said about the difference. I really feel for what you are trying to do. When I tried to write about graphic design, that book I wrote on typography, it's a really awful book! But what happens is everything that you do in teaching, you realise it's incredible difficult to get into the book because the mechanism that makes students good students flourished is extremely awkward to write down. And the process of trying to put order into a book, I found incredible difficult to do. I can do it really roughly, and think I've covered it. But if we are actually trying to embrace the way we teach, this doesn't really do it, and it never will.
FG: Do you not thing there are ways to extract, capture ...

SH: It's all been done before, have you done research on teaching? Teaching is an incredible inefficient process, amazingly expensive and inefficient process. And people, who don't teach, don't understand it, and there is this group in academia that think they can make it more efficient and I can send you a paper that a writer has written about this. And I do think you need to do some research into teaching.

FG: Are you talking about institution or teaching typography?

SH: Not just about typography, But where's this research into teaching and typography? There is a lot of scope of that in the profession of design that know very little about teaching.

AH: Maybe the model idea is good, but also identifying pools that you want the student to dip into, and hoping that they would learn from these pools but not necessarily in the order that you determined. Sometimes it's about them learning to drink from these sets of pools that you know about. Rather than saying there is a structure here, there is an incremental staircase that you can climb in, it's just like, dip into this space, spend some time in here. If I know someone spends 2 weeks dipping into this space and not talking about type, and if they got any sensibility at all, which let say they haven't any in art school, something will have begin to come back. They would have experienced the space and then begin to talk about it. Then you can guide them to another space. A lot of your students are migrating to these pools, particularly postgraduate level, and what you are doing as a member of staff, is not teaching, as in delivering a curriculum but you are an enlighten guide to an overview to the space. And that's all that you're doing. The believe is, and this is the bit where you can't get into the book, is that you build relationships with individual students, from the basis on their love of the subject and your love of them to develop into the person they want to become. And that, you can't describe it.

KS: The thing that Andy says is the bit that you can't nail down.

JY: The implicit knowledge of how you teach...

KS: And the gesture, the oral tradition. That's what is wrong with that book.

GC: That's experience, different levels of experience.

Formal discussion ends. Reviewers discuss amongst themselves regarding issues brought up during the review and also take the opportunity to socialise.

9.5 Peer Review Transcript: Practitioner Group 1

This is the full transcript of the peer review session conducted with the practitioner group in London.

Event	Practitioner Peer Review Session (London)
Date	8.06.05
Time	6.30-8.45pm
Location	Activities Room, The Women's Library, London
Participants	Tim Beard (TB) Matt Berry (MB) Damian Ferrer (DF) Philip O'Dywer (PO) David Rainbird (DR) Richard Smith (RS) Isable Sole (IS) Simon Yuen (SY) Mariana Zegiannini (MZ)
Moderator	Joyce Yee (JY)
Legend	Words in italics are a summary of discussion in instances where the content is not considered key data, as well as annotation to provide a fuller description of the session.

JY began the session by asking the reviewers to introduce themselves and what they primarily do in their practice. After the introductions, JY handed out the definition list. After the reviewers have read through the definition list, JY gave the group its first task. She explained how the exercise will be conducted and its purpose. Statements were handed out. JY assured the participants that short answers are fine, as some of them were struggling to answer the statements.

When the group completed the task, JY asked TB, DR, RS & MB to read the 4 statements.

TB read out Statement 1 –'What I like about the current usage of screen-based media is':

- Not much.
- When it is bigger than 10pt
- When it is smaller than 10px (really)
- Typography has been democratised by screen-based media e.g. blogging – surprisingly most of this looks ok.
- Movement.
- Experimentation.
- Not much/scale.
- Hints at possibilities to come – dimensions, animation.

TB commented that it is quite an abstract question and that it is difficult to summarise. JY asked the group if they have additional comments relating to the statement. TB commented that the one element that stood out was the animation and movie capability of screen. Motion and interactive typography has the advantage of screen-based media over print. TB admitted not quite understanding the question. PO pointed out that it's not what he likes best, but more about what he is most hopeful for, most excited about and most focused on in a positive way. There was general agreement in the group with his statement.

MZ: It is the main difference against print. We still guide ourselves with print communication when compared with screen-based.

JY: And how do you think the success rate has been in bringing out these key differences?

DF: Generally, it has not been very successful. You'll find that a lot of screen-based designers don't necessarily come from traditional/typographic background. And so applying without the basic *(inaudible)* framework in the layout and *(inaudible)*. That's what I observe.

MZ: Legibility issues are still not explored too much on screen. You still need to read things on screen and sometimes is very difficult.

SY: I think it's only in exploration projects when the designer is working for themselves or for the design community. A lot of the times when you get projects from the client, you would love to do all the things that potentially you can do but there is no way you can do it because the clients are so used to seeing what they are used to seeing on screen. It's very, very hard to get past their pre-conceptions.

JY: So it's not just about technology but the client's perception of screen media.

SY: Yes.

DF: I think it depends on the tool that you have as well, for e.g. when Quark became accessible for everybody; suddenly everybody was a desktop designer. Now you have a similar situation with multimedia and animation tools. Everybody can get their hands onto it but they don't actually know what to do with them. That's more what I like least about.

DR read out statement 2- ' What I like least about the current usage of screen-based typography is'...

- Inappropriate use of traditional measures of 'good typography' or composition.
- One can't read on-screen long texts.
- As above.
- Blurry stuff.
- Sometimes is not thought for the end-user, is just something 'cool'.
- Chicago.
- Not understanding design principles.
- Flatness/HTML/restrictions.
- Lack of education/understanding by 'screen-based' designers.

JY: What do you think are the key themes of the answers?

DR: There're 3 in there at least – all relating to bad design.

JY: Is that just bad application or not understanding the medium?

DR: Hmm, lets see... either the designer comes to the medium and have not been trained properly or if somebody have been trained in it, doesn't then apply those rules in screen-based and therefore *(inaudible)* and makes a real mess.

PO: For me it's people who come from a print background, have ideas on how to generate contrast through scale, which is very difficult to do on screen. If you use scale to generate contrast, you end up with very small type and large type. There are other ways to generate contrast on screen through the use of brightness of colours, which are more powerful on screen. *(Inaudible)* – That's an example of how you see design for print on screen. But not as bad as you see drop caps on screen. That doesn't happen very much on screen, it used to. But still that kind of (print) approach is still there in other subtle way.

RS read out Statement 3 – 'The main difference that I find designing with typography in print and screen is...'

- Viewing space.
- That in print, I can see the result and have in my hands while screen type is not tactile.
- Resolution & variability (2 things).
- The difference between looking at things at a pixel level and looking at things at a much finer level.
- Control, either for or against.
- Presentation of information over time.

- Control over final result.
- I agree with all the above.
- I can use really big typography.

JY: How would you summarise the points?

RS: There's something about the control and variability there – it's a moving goal post. Tactility – which maybe ties into the pixel level. In a sense, a lot of screen typography is about camouflaging all the inadequacies whereas in print you can celebrate what's there. It relates to presentation of information at a time. I would summarise the key main points as:

1. Temporal
2. Resolution
3. Tactility

JY: Is the lack of control a big issue or do you celebrate it?

RS: I think it is a problem.

DF: It is, yes.

RS: You're always doing something else about it, but you are always hedging your bets, whichever way you look. If you look towards Flash for e.g., there is a degree to which you could run database with that, but it tends not to happen. So you are missing one of the main advantages of screen-based media or you are at the mercy of HTML or someone's browser.

DF: We do quite a lot of motion graphics work. A lot of the kind of drama and theatre is taken up from the movement and not necessarily from the layout and typographic treatment. So you can get carried away with the theatrical side of things and not design. Until recently the animation industries has started using software tools in terms of typographic control like After Effects or Flash. For a long time, we just haven't had the layout options.

JY: Do you think these constraints are something that we have to live with?

DF: Its getting better...

RS: It's getting better, but it started because it was a medium designed for designers. And if you think of the history of print, what's became design has always been part of that...it's a technology thing.

MB read out Statement 4 – 'The main similarity that I find designing in print and screen is...'

- Is that there are perceived to be too many similarities.
- The tools used
- There is a reader at the other end.
- No comment.
- That both processes of design are different; people get the grammar and the detail wrong in both.
- Does it look good? The rules.
- Composition & content.

MB: One thing I found interesting, regarding materials is that technology today; web-based graphics are so accessible to so many people. Basically you get a lot of bad design, bad typography from non-designers that intermingle with some really good stuff as well. In print you don't get that, and I find that quite interesting.

JY related a story regarding children's usage of DTP software at age 7 or 8 in school.

JY: How much is it an issue regarding the importance of a reader? In screen, its very much user driven than it is in print.

MB: The audience is much broader.

MZ: It is more segmented. You don't know who is going to be looking at it even though you can imagine and try to design according to that, you never know.

JY: So does that make it easier or more difficult to design for an unknown audience?

TB: You always know you have an audience. Doesn't mean that if one audience can look at it, that others will not look at it as well. Or in fact if they do look at it, they might be offended by it, or be amused by it or don't understand it. It's just a similar kind of thing, just that more people could see it because of the Internet.

SY: For both media, there is an end user, but I think people who are looking at print, seemed to be more forgiving as print has been around a bit longer. Things that can be done on print have been developed so much more than for screen-based media. From my experience, people looking at websites do seemed to be less forgiving if things are the wrong size, or the layout is slightly wrong. If you do something a bit out of the ordinary, I think you're much more likely to be successful with print, because it's been around much longer and there has been so many different things that clients have seen print can do.

MZ: Its also expectations. When people see something on screen, they want it to happen fast, and they are not very patient. They want as few clicks as possible. It relates back to the issue of time isn't?

Majority of group agreeing.

DF: I guess that's one of the things that you have to think about for on screen content, is navigation and how people choose to work through the content whereas in a book, it's straightforward.

DR: Clients are much more interested in accessibility right now. So there's a whole load of guidelines that you have to follow and test, in ways, which was never a part of print. *(Agreement from group).*

JY: How has that impacted the way you approach design jobs?

DR: I think it makes it very difficult. I think it's going to be more of an issue within a few years since it's going to be difficult to argue against.

PO: Seems a bit premature, orthodoxy created by usability experts so quickly.

SY: As a delivery channel, while the client might be willing to accept the most elaborate, amazing format in brochure design or literature work, when it comes to their company website, they are much more pragmatic about what you can or cannot do to the content and how quickly they want it to deliver their information. There are obviously clients out there that would allow you to create a more experiential site but a majority of clients see the web as a very quick delivery channel, where people just look and find what they want.

TB: I think the key word there is experience and that's what it is about. There are certain websites, where an environment is experienced, where it changes, where it has depth to it. I think that communication on screen, similarly in print, does take a good bit of design. A poor bit of print is still a poor bit of print. Similarly for screen, that's where there are similarities. On-screen content is more of an experience and like you said *(referring to SY)*, people presume its going to do loads of stuff, while print offers audiences very little in terms of what you can see and what you can understand. You just know what's it going to do. With screen-based typography, you're not quite sure what's it going to happen next. The user is unsure of whether to interact with it or to leave it.

JY: There are two opposing points of view, on the one hand screen-based media offers you freedom of creative possibilities and yet there is an expectations of clients regarding its role as a delivery channel.

MZ: Depends on what the message and contents are. If I want to buy something online, I don't want things to move in front of me. I just want to pay and leave as soon as I can. But if I'm seeing a website from a design or architectural firm, then I would expect something different – much more visual and interesting. That's the similarity with print, designing with form or with content.

JY: Moving on to another issue about the level of typographic knowledge of graduates. I would assume that all of you had experience taking on new graduates. How would you rate their knowledge of typography? Has it improved, or declined over the years?

SY: I think it varies quite wildly. You get some graduates through the door that seem to have a really good grasp of screen medium and what its capabilities are but then you also get some graduates who claimed to be trained in print and screen. And they then open Quark Xpress to create a web page. So, I feel there doesn't seem to be a consistency.

DR: I was in an interview this week, and the candidate studied in California and did 2 semesters in Saint Martins. I asked her how she thought the 2 colleges compared, they way they taught. She said she got very little or even no craft instructions in Saint Martins. Maybe it was the exact time she was there but in comparison, she had to learn a lot of craft in California.

JY: Craft in a sense of learning to draw the letterforms or learning to use the letterpress?

DR: Typographic principles and learning to use the programs. In Saint Martins, it seemed it was more the case of fending for yourself. She was free to do what she wanted. She was given the

impression that being educated in Saint Martins, would allow her 'to change the cultural landscape of Europe'. *(Laughter from everyone)*

RS: Was it MA or BA?

DR: It was BA.

RS: I think there are pools of knowledge out there. I know in Saint Martins, Phil Baines is a mine of information. But it's not necessarily that his classes are made compulsory in the curriculum. My sense is that there was less of that when I was at college. But I supposed the amount that has to be beaten into students is less. But there is loads of knowledge out there for them to go and get. Backing up to what Simon said, that's why you get such a difference with students who are genuinely interested in the subject and are absorbing knowledge from everywhere. It depends if people are interested in typography. I know someone, I shan't mentioned names, and he came from CSM and is doing very well for himself. I got the highest respect for him but he hasn't got a clue about typography. Yes, he can throw some type at something, but that's not really where his strength lies. He realises that, and he is a serious designer, very good designer but not too bothered about that particular aspect *(about typography).*

DF: A lot of the design courses now are diversifying and trying to squeeze everything in one course. I certainly find a lot of students who go through the course are certainly taught time-based principles but not typographic principles. And they don't even think that they need it, which is the scary part.

DR: I think graduates learn more in the 1st year out of their course than their 3 years in college.

JY: How do you think they pick it up? Absorb it at the company or...

DR: You have to or you wouldn't survive.

DF: They are absorbing as you are beating them with a stick! *(Laughter all round)*

JY: Yes, certainly when I was fresh out of college, I learnt all my print techniques on the job and not in my college.

DR: You can't really be a print designer and learn it in your bedroom. You have to go out and experience all the different ways you can do it whereas, so many web designers do that now and some of them do great.

TB: But they have to be the kind of people who like design principles and history of design, which I think was totally missing from my degree course. It was only when I started working that I was told about these people and things that occurred in Europe. I think it's those kinds of principles and history of design, which I think is missing from students.

JY: Is typography a difficult subject to understand without formal training?

SY: I think the information is out there to learn for yourself, but it does make a big difference to be able to immerse yourself in the craft of typography, for a year or 2 years in college because its one of the skills that you develop over time. It's not quite the same reading about typography or those countless manual books.

PO: It's like learning piano or something, you can't just do it. You have to learn it and then you can go mad with it.

MZ: Is typography on screen the same process?

PO: Yes, I think it's the same.

JY: Is it about learning the core fundamentals before learning it to apply on screen or do you think someone without a print background and a print understanding of typography can actually work successfully in screen-based typography?

PO: Even if you were never did print, you would still have to learn the fundamentals of screen typography, whatever they are. A lot of things that you worry about for print you don't have to worry about for screen, in terms of degree of control.

DR: I think there are always exceptions to the rule. You'll get a genius that'll come along and change how we think about screen-based typography. But in general, people need the basics taught to them. They need to be told what the rules are, and then they need to break them and learn from that.

MZ: I think what you can educate is perception, to appreciate things, to educate the eye.

JY: I've been told that students do find typography a scary subject, for whatever reasons, like choosing a typeface.

SY: I think it does depend on what course you are on. You'll get some courses, which are more focussed on other aspect of graphic design subjects. For example, in my BA in LCP, they would pound typography into you in the first 2 terms. I would have to hand render letterforms on A1 sheets, which we all hated, but I now see why they did that. So it does vary quite a lot.

JY moved the discussion into the second part, where she introduced the framework through her presentation and invited the participants to review and critique. She paused the presentation before the detailed description of the 3 new media attributes and asked the group for comments regarding the typographic genres and the knowledge categories.

JY: I would like to know what you think in terms of how I have structured the framework, the difference between the local and global principles, the groupings of the knowledge...do you have any comments at this point?

PO: I think it's really interesting the idea of breaking down the traditional and historical way of teaching type where you start of with Gutenberg and you end up with WWW. I can see it turning it on its head, breaking it down – it's really interesting. It' really quite a lot to get your head around...

JY: It is.

PO: It's really quite difficult to imagine how you would learn about letterforms without thinking of where it came from at the same time...but it's a really interesting thing to attempt.

TB: I think that's the biggest problem when you are trying to create awareness of foundation principles but without any reference to print or screen. You naturally get 20-30 historical references to print in comparison with screen, which will be relatively small. So that's what makes it difficult to disassociate it from the two practices. I just don't know you could stand up and talk about typography without starting to get into one or two areas (with medium references).

PO: We are so embedded in the way that we have been taught which it really difficult to...

TM: Absolutely. I do think it's about that, using reference points and experiences that people have with typography from the last few hundred years. With screen, we are almost operating in a vacuum almost.

MZ: How can you talk about form without talking about technology? How can you explain what the san-serif font is without talking about technology? How can you talk about Verdana and not talk about screen-based technology?

JY: I think what I am trying to say is – it is not a utopian model, I acknowledged that you can't separate the form without technology in how its come about. But I think there are certain issues, for e.g. 'Orientation' – a global design issue, which is present in print, and screen that can be distilled out and identified as global principles. At the lower skill-based level, it is still important to learn those craft skills but at a higher level (conceptually), it's more important to try to understand what typography does rather than how it's applied.

PO: In a way, you can say that it doesn't really matter why a serif is a serif because none of those technological reasons matter anymore. We have developed better production methods. They are still talked about a lot at the beginning but maybe are becoming less important when compared to the other issues.

SY: I agree with you. When you talk about form and the technology attached to it, I think while its useful, it's not essential to know about it. If you talk about technology, you can still talk about print and screen-based typography relating to technologies that is used because there are still some rules that apply to typography due to print history. In the teaching of it, you can also talk about the possibility of form through technology, whilst they had to have serifs because of the technology, using technology you can have a time driven typeface that changes over the course of a day or one linked to a database. So those things are very specific to the technology but if it's like what you say, taught from a slightly higher level, then it's just about the relationship between technology and typography and not specific about what the technology has been about.

DF: It's like at school, when you are learning history, modern history if you don't know what the ancients were doing, it's very difficult to have any sort of foundations.

PO: I almost disagree with that. A serif doesn't really have its craft-made meaning anymore (i.e. how it was carved resulted in the serif) but it's seen as expensive, traditional (cultural meaning). And that meaning has become more important than its previous meaning, which is the product

of the way it was produced. So it's backward to teach the craft from the beginning because how we use type now is so divorced from its original meaning.

JY: What do you think about this issue *(referring to DR, RS)*

DR: I agree that we are completely divorce from why serifs are serifs and why they look like they do. I agree that people don't really care, and am just concerned why Myriad looks like Myriad or new fonts tweaked for laser printers looks like it does.

DF: I guess if we introduce a line on when is a serif a serif, how do you draw the line on how far you go back to the understanding of the history of typography and where it comes from?

DR: We will surely have the terms and the terms will always carry the history with them. We will always say uppercase and lowercase, which is a reference to setting type. They didn't drop it when they went to photomechanical type setting and they haven't dropped it since. So we will always call it uppercase and lowercase type.

DF: I don't know, I think more and more people are using the word 'capitals' or 'caps'.

DR: That's true, yes. And more and more people are using 'fonts' instead of typeface because of computers. So yeah, it is possible to erase that, but it takes time.

PO: But I guess if this framework accelerates that divorce between it...

JY: It tries to introduce an approach and I'm trying to tease it out...I supposed its nice to know the historical reason why a serif is serif but in a realistic and practical education environment you only have 3 years to teach a lot of subjects. And a lot of the students enter courses without having done any foundation courses. Current students have to learn so much more than when I was a graphic design student.

SY: It's almost like it's nice to know about those things, it's like nostalgia. Like when you are moving flat, you have to be brutal to get rid of your junk that you have not used or touch in many years.

DF: I find it difficult, as it's very much a craft issue, the craft of setting type, getting it right. I'm just a little bit worried that it will be lost, I understand why you did it in your framework, but I'm just worried.

DR: I think its important for students to consider all of these things, when they are considering legibility because legibility is not a rule, it's a debate. Students need to enter that debate before they even set any type.

DF: And the accessibility approach, that's going to be much more of an issue to people in screen-based course than the history of typography.

DR: When I talk to Americans, they tend to prefer serif type for legibility purposes and Europeans seemed to be the other way which for me confirms that we read best what we read most because most American designs are set in serif fonts.

JY: It's still a very educational-based framework and I have conducted three student projects based on it. I've had one semester each with 2nd year design students at Northumbria where I set them a cross-media project. They worked on an interactive type project and a print component. I presented them with 4 lectures, the 1st one to start them thinking about typography and its four ways of application. The next 3 lectures were looking specifically at relevant attributes of new media, which is hypertext, interactivity and time-based motion. It was difficult to fit all the content within one semester. However, they were useful in highlighting the differences between print and screen-based medium. Predictably, the graphic design students were very, very linear in their approach to screen-based medium. They were asked to do an interactive film trailer and their storyline was very linear, type would not move, there were no pacing, no editing. So this framework has been tested within an educational environment, I was wondering within your own design practices, how do you see it being adapted for practical purposes, for your own use?
(Silence... for about 10 seconds)

JY: You can be brutal about it. Designers tend not to follow rules and best practices when presented to them.

TB: So you are talking about outside education, it's about working jobs.

JY: Yes, in working jobs.

TB: It's a different application. It's not about education, although it's about educating the client, its about solution. So, I don't quite see how it would work.

PO: In a way, it's a little bit like already how we are having to sell projects to client, especially in an identity program, you have to really start from an abstract level, free from any application and

then say how it could be applied to screen and how it can be applied to print. So you don't start with the print application anymore, really, it does echoes how a cross-media project might run.

JY: The diagram itself is an abstract representation of the idea of media separation, but can you see for e.g. the tabular matrix as an analysis tool - for e.g. the SWOT test. I could see it being a quick and easy tool to help designers explain their process in a pitching document.

TB: So yes, in terms of a strategic application, it would be useful I guess, but in terms of problem solving, which I see design as, whether on screen or print, its about problem solving. That's a different kind of design process.

SY: In your framework, you are talking very specifically about typography, where else in everyday design jobs, typography is only a small component of what we do. So applying your framework would be quite tricky to what we do, because there is so much more to what we do in our design work such as websites and CD-Rom.

MZ: Some clients when you mentioned the word 'typography', they don't even know what you mean. So to start talking about 'form', 'content', 'meaning' and 'context' would not work. They would just be concern about 'where is the identity?' Sometimes you just don't have the time to explore it, I find it very useful to think in those terms, but I don't know how practical it is to work in real terms.

JY: So echoing what Tim said that it might work on a strategic level, but not on a day-to-day level.

MZ: Depends on the project.

DF: Yes, it depends on the project; it's quite a nice filtering system to...

SY: I think its quite nice to have to have it in the background, because it's quite nice to be reminded of principles, reminded of some of the reasons on why you are doing something. After you have been doing it for while, everything becomes automatic, you'll on autopilot. And sometimes it's nice to just pause to think about why you are doing certain things with type, and I think for that reason, it could be useful.

TB: Problem solving is not done at that speed, it is done intermittently but it's done for the whole scale of the project. You're thinking about the whole project, from the type, to the strategy. It would be lovely to have time to reflect, even sitting here today and talking about type is rare and

more common in an educational world. Just having the opportunity to objectively look at a project that you are working on is generally rare.

JY: Damian, you mentioned before about the use of the framework as a filtering system, could you elaborate what you meant?

DF: I meant in the design process, whenever you have time to reflect.

MZ: It also depends on the personality of the designer; some designers are just not interested in 'meaning', 'context' and 'content', and are only interested in form. They see it as a sign of self-expression, and this is what they like doing and this is what their clients like them to do. That's why they employ them, because they have a very specific style.

JY: So it won't be everyone's cup of tea?

SY: No.

JY: Richard and Matt, can I bring you into the discussion?

RS: Before you were asking how the framework would be applied, what were you thinking that it would be applied for? Who is this framework intended for?

JY: To be honest, when I first started the PhD, it started from a personal problem I had applying my print-derived knowledge for screen. It was a constant conflict between print based principles and its application in screen-based media. And in a sense I wanted it to be a practical tool. As the PhD progress, it became much more of an educational framework because I'm not at a stage where I am able to distil it into a practical tool yet. It's a very complex framework, I see breaking it down to strategic tools for designers, such as one to describe a design process or an analysis tool if we have the opportunity to review past projects. I guess the designer in me would want it to be a practical tool, but maybe the question is can it ever be a tool for designers?

RS: What I got from the introduction was something I agree with in terms of separating the content from the way it is presented. The subsequent screens seemed more like a way of looking at something that is already there. And I supposed how people could use it is what would be the way of thinking that you are proposing that should change the way that people would work. Designers do tend to be fairly chaotic in the way that they work. And most people would probably not end up following a system. And a system might be in danger of knocking some of the

creativity out of that, because you end up asking too many questions all the time instead of using the 'force'. As an approach, in terms of typography, quite a lot of what you are saying relates to design more generally not just typography, about the set of baggage each subject carries with it. I do see that kind of thinking is applicable generally. I do also think the difference in how we design with letter type when you are composing and making decisions on how the end product must look, and what we are able to do much later now in the chain or process is to make it look like a certain way, for e.g. in XML. That's the potential that we have. So I do think that it is an interesting idea as a direction for people and I wonder where the signpost are for them to go to do? This is a way I'm picking something, now what is the process for me to put something together? Which I get more of a sense from the initial premises that you set out. Does that make any sense? Could we go back to the slides? It's the first diagram *(the Global Principles in Hexagon diagram)*. What I took from that is a necessary thing, a pre-stated fact about what's going to happen here, where a lot of that can be left open in the second one *(local principles)*. That's actually quite interesting. It's not necessarily what clients are thinking about or necessarily most designers.

MB: I think it can most certainly be used as an information tool for designers *(inaudible)*. Personally I think it had to be more simplified than that, because the amount of time you take to understand it.

RS: I actually find the table of comparison much simpler. This screen starts to propose a way of working while the subsequent screens are a way to unpick or understand the work or issues and allows you to compartmentalise things. This does help you think about things but not necessarily help you put them back together.

JY: Do you think as designers we are more interested in the first stage than we are at the later stage where we unpick things?

RS: The need for people to unpick things is going to be at their own levels. So whether or not someone should be interested in serifs or san serifs doesn't disable good design, as long as you understand what it does for the person who is reading it and what you are trying to make it do. This is more like a mission statement (referring to the textual comparison table) so you can say that that's what you are going to do.

JY: What does everyone else think about Richard's view in the separation of the two parts of the framework, where the 1st part is a suggested approach while the 2nd part is more of an analysis tool, a way to describe work?

DF: I think its quite difficult to work in a different way but as we mentioned a couple of times about accessibility issues and stuff like that, the way we work and the way design agencies work across cross-media is going to change whether we like it or not. Maybe you still have a print fraternity and new media work. There's only very few companies that overlap in work. A lot of agencies still do branding and guidelines and hand out it out to some other agencies to create the online component. So I think its going to be very difficult to say that 'this is the way we use to do it, and now this is the way we are going to propose to do it from now on because of these external factors. But in an educational setting, it might work.

TB: I think in an educational context, there's somewhere for it could go. Educators won't mind that you can break it up and then try to put them back together again. But in a working context, specifically about problem solving, where you are thinking about the problem and a solution, that's not really about an educational way of thinking. We are sitting and thinking about the client and the problem they've got rather than structures behind how you are going to get at it. Although the diagram is very clear in terms of the way forward, I just think the way it is visualised there, its probably confusing. And in terms of a structured way forward, yes it could work in an educational way. I don't know how, in terms of creating principles of design in a vacuum away from the real world. I don't know how it could work in a practice, especially taking into account the chaos of being a designer.

MZ: But don't you feel that when you were studying that it was very form focused and then when you start working, its very much context focused, which is the relationship with client. There is a gap there. At school they generally teach a lot of form but they don't tell you a lot about client relationship, they might talk a bit about problem solving, but not much I think, my experience at least in English education. Maybe the gap exists now between theory (education) and practice. Maybe you can bring this framework into education that takes into account this 4 different areas, 'form', 'content', 'meaning' and 'context'.

PO: That line *(referring to the comparison table)* ' principles to ensure flexibility and appropriateness' that's just not a mindset that I think you encounter when being taught. So maybe it's a new way to approach teaching.

JY: How do you think they encourage student thinking now?

PO: In a way to be able to apply your principles with flexibility, you need to know quite a lot to get to that stage of maturity.

TB: True, to make objective decisions.

PO: So it can be quite difficult to teach to begin with, it is something to arrive at. But it is really interesting the idea of talking at an early stage about how your decisions aren't necessarily going to result in perfect solution and chaos in the way it is reproduced.

JY: Do you think they don't do enough of that in education?

PO: I don't think so; I don't think that's a way they are thinking about the design process that's really used, one that is really tied into the real world, the way it is reproduced.

SY: That kind of teaching is also much more thought provoking isn't it? Rather than setting a brief about designing a logo for a company, the new framework should be about more thought provoking ideas – something that they would do in post-graduate courses.

MZ: I think it's very good to educate lecturers as well, because some lecturers want the output of their course to look specifically in a certain way. When they put up a show at the end of year, it looks like the way the lecturer wants it to look. So sometimes it's good for lecturers to think differently, in different dimensions.

DR: I agree with what's been said, I think the framework as you got it, with the 4 columns and 3 rows.

JY: I think I might have to simplify it.

DR: I don't know, I think its ok. Can we go back to it? I do see it as a useful tool, but only in an educational context. I don't see it being useful after education, but that could mean continuing professional development, it could mean somebody taking time out. But in practice, I totally agree with what's been said, its going to be a far more organic process – that you are given some content, you would like to give it some form, and some meaning and if you are lucky, you've got some context, and you like what've done and wake up and think 'wow' that's really nice. I think in an educational context, a lot of people go in thinking I'm going to learn to put some content into this program. They are thinking in box no. 2 (referring to the matrix). I think a lot of colleges are only teaching that. They are only teaching them one of those blocks and if they just show them examples and talk about why they are important from each of those 12 boxes, you'll get a much more rounded graphic design graduates and I'll be happy to employ any of them. But at the moment, hardly any of them stray beyond those 2nd, 3rd or 4th areas of the matrix.

RS: I think on this slide, you term the 3 rows 'knowledge categories' and you do need to have them before you go and start doing something. Maybe in here, you could look into some of the boxes, the 'social, cultural and historical' aspect of form, that's something that you should have stored away and you can do what you will. The more you know about stuff, the more you can do. But maybe something about technology (referring to technology and context) and that's a hole in everyone's knowledge because its an on going thing. And in terms of having to unpick what you are doing for someone, probably in particular the 'meaning' and 'context' column, something that is the live end of it. And often in terms of meaning, sometimes, we as designers are reliant and subservient to the whims of people who conduct research. They can argue down any creative solution and all designers have to typically fight their decisions. But the more we own our part of the research, the more our focus can be on the project, the more we can use it to counter market driven research. Sometimes it is the bastard child of a marketer and an artist. We go to Art College, so we somehow lack the ability to drive someone else's message and take it out there. The marketing person always feels that they can play the trump card.

DR: But I think if people are trained in or at least is aware of examples of working in those knowledge categories, it doesn't meant to say that they all want to teach theory. They might just want to set type. But at least there is a choice.

TB: It looks like quite a good course structure, actually.

RS: I was just thinking exactly the same thing. Not recently, but the last couple of years, I've done a little bit of teaching. The course structure can be presented and explained to new tutors, and allow them to see where they fit into this area. This will help them get a really clear picture of what they will be doing. I understand where you are trying to end up by referring to your mission statement. And that would really contextualised what you would then be talking to students about. And I've never seen anything remotely like that. You go in, and talk about modules and you never quite know what modules are, it's never made apparent to students.

SY: A lot of students choose which college to go to base on the reputations, and in reading the course description, they don't really tell you their framework of what they are actually teaching.

JY: I think most of the course descriptors are for QAA but in reality they would teach what they want to teach in whatever style they are comfortable with.

RS: I think that would be its strength, if you can actually describe it as an ideas course.

JY: Would anyone like to comment on the 3 new media attributes that I have identified for this framework? Am I missing any attributes?

MZ: Is this specific to typography?

JY: Yes, it is specific to screen-based typography.

TB: How's type being taught for screen-based medium at the moment?

JY: I think they teach them in a traditional manner,

TB: So there is no differentiation?

JY: From the lecturers that I have spoken to, there are 3 different ways: subject specialism is taught as pathways, where the 2nd method is having a complete separation between GD and multimedia design and the 3rd strand, where the multimedia is a separate course, but is more geared towards the computing side, rather than a design course. And in terms of typography, they tend to teach the traditional part and expect them make the leap into screen-based projects. The only aspect that is really touched upon is time-based attributes. Some course that do a lot of motion graphics, for e.g. Ravensbourne, are using it in an animation sense but not in an interactive or hypertextual sense.

MZ: *(Looking at the Hexagon diagram)* You have the old parameters and the new one, are you not going back to teaching specifically for screen medium here? Are you suggesting teaching specifically for screen medium? Aren't you then focusing on one single technology again? One of the points on your comparison tables is the idea of cross-media. Are you going back now to say that this is a new framework, but we are still having media separation?

JY: It's a new framework where I don't want to put everything on top of each other. Which is why I have created global principles and the idea of local principles. I did populate the print medium, and I am not saying its empty, it's just that I am not concentrating on it, but that does not mean that there isn't any content in there.

MZ: OK.

JY: What I'm saying is these are the core knowledge that you need to have *(referring to global principles)* and these are the more medium-specific grammar that you need to learn for e.g. editing in film.

MZ: OK. Don't you have to learn as well, issues such as legibility or not?

JY: Yes, you do but I think the idea of legibility is in the global principles, where the issue of legibility is not a medium specific issue.

MZ: Top level.

RS: And is that where 'consistency' might look in terms of something that is going to...

JY: As an idea or in terms of as an attribute, and consistency could then be described in more medium-specific terms. Consistency in print could mean where the text always start on a page where else consistency on screen...

RS: I mean more about the consistency between print and screen as part of an organisational material.

JY: There had been criticism levelled at the framework regarding the separation of print and screen, and maybe that is something that I have to go look at. The criticism is that instead of reflecting the future it is reflecting the current framework. Maybe it's not radical enough? I don't know.

MZ: There is temporality in print medium, I think.

TB: But that's difficult. That is trying to say what sort of a designer are you? And although some of you can say, that I just design posters or I just do film or whatever. All designers aren't quite that specific. They are more interested in exploring other areas, I'm not saying they are any good at it, but they are interested in exploring other areas rather than being too focused.

PO: I think one thing I'll add to that list of screen attributes is the idea of dynamic designs, on a simplest level, websites and layouts have to respond to arbitrary amounts of content so that goes up to amazing multi-dimensional responsive typographic designs. When you were talking about how shouldn't all the principles be as one, I was thinking dynamism is definitely one for print but in a way it suggest all sort of interesting hybrids as well. If you started to take attributes from

screen and apply it to print design, what is a 'dynamic' print design? You've got less control over the content. It could be useful to also try and stitch it all back together again.

JY summing up and asking last comments from the group.

DR: I was actually going to add, I agree with the missing attribute on the fifth panel, there should be one more, because you've taken time-based motion out of temporality, but there is another part of temporality that has nothing to do with animation, which is dynamic web-pages, which is blogging. Somebody, somewhere is designing templates for blogs. They have no idea what the content is going to be, because somebody will come along and fill it with their opinions. So, I was just going to add to the discussion.

RS: There are also really awkward things like PDFs.

DR: Oh God!

RS: Enough said! *(laughter)*

JY: Should we do away with them?

RS: Living in that hinterland that... you are not going to read that much on screen, give them a PDF and they will print it out. There's so much content in that format, its almost universally ugly. It doesn't look good on screen or off screen.

DF: It's neither designed for screen or print.

PO: You're starting to see dynamically generated PDFs as well now. You can see some typographic layout that has been generated by some script. It can be interesting if it can be well designed.

DF: We've tried doing that and it is incredibly difficult.

RS: We've done that for print, for whole catalogues and stuff, if you really sit down and think about the kind of things that you are likely to put in, and then you make the forms that will create the content. You can start to create something useful. But you have to work at both ends at the same time where tools are on the market are made by technologists who would not know how things might come together. I say techies in a terribly pejorative way. *(Laughter)*

JY: Matt, do you have any last comments?

MB: No, not really.

JY: Isabel?

IS: I just found it confusing but maybe because English is not my main language. I think its interesting what you are proposing, I just think the graphic itself, if you tried to find a solution, then I find it a bit difficult to understand. Maybe because you have been researching for 4 years, and of course you see it quite clearly. But to me, it took me a long time to understand what it was referring to.

JY: So work on my graphic design? *(Jokingly)*

IS: No, no *(laughing)* but I found the first graphic with the table much clearer than the subsequent graphics. Also, going back to the process of design, even if you say that schools don't teach you, I think it is something you have within you, you have your own inner process, even though some people believe that designers are chaotic. Even amongst chaos, you'll have some formal methodology. Even if you are chaotic, when you are designing, you are constantly thinking about the end user. Even if you don't follow the 4 processes *(referring to the typographic genres)*, you will naturally follow some sort of innate process.

RS: I agree. It's the difficulty that we don't really have a language to properly unpick, so maybe that's why it's useful. It's very difficult to talk about design of any kind at a critical level because it either goes in too deeply like some design writing or it's just platitude along the lines of Design Week. You can still see the amount of effort that goes into these writing, but we don't have the language to unpick or discuss it, and some arts do. But I think ours is particularly bad. Perhaps architects have something better.

JY: Mariana, do you have any last comments to make?

MZ: No, I think all very interesting. I just am interested in this joined, cross-media approach.

JY: Integrated approach?

MZ: Yes. I really think it would be fascinating for student to start seeing things without media. Forget about screen...if possible, I don't know is it is possible but I think it will really be very interesting.

JY: Phil?

PO: Yes, I agree with Mariana, it would have been really nice in college to have been given a brief like that, to invent something that than can be disseminated through different media. It's all very interesting. I think it's also interesting with the grid of 12 boxes, that helps me think about 'what box do I fit into?' It's quite interesting to recognise yourself in the context of the other parts of the subject.

JY: Simon?

SY: I though it was quite interesting when we talked about the framework and where it sits, in one pool you have education, and in other pool you have design practice. But there is a place where there is any overlap; it's the student placement. I thought that might be interesting to explore how that framework will work in that context, where you have one foot in education, and one foot in the real world. And looking at some of your boxes, maybe some of your boxes have been ticked while on placement.

DF: I've gone on to a bit of a tangent, after Richard's architecture reference. As I was thinking, architects do embrace new technologies a lot more quickly than designers do perhaps. A lot of architects have started integrating content to physical space.

MZ: They seemed to be more comfortable with high-end theory and suddenly switching back to practice. They are more comfortable with that gap. Some designers are not comfortable with theory at all. They just get impatient or scared. I don't know why. Architects like Daniel Liebeskind, he was not building for a long time, and suddenly he is everywhere. He is following his theory. I don't know if it relates to your research or not...

JY: That gap between theory and practice is very noticeable and today's discussion has highlighted this point as well. There is an acknowledgement that there is a gap, and what can we do about it?

DF: But when you design, there are so many different levels as well. Design is realised in so many different ways and we are only talking about what we know, and what we do, there's a whole lot of other stuff that is out there.

JY: There seemed to be a trend in PG level to start thinking about researching in design. Ten years ago, a PhD in design would be very rare. But now, there are an increasing number of students pursuing it, not just in architecture but industrial design and graphic design. There is a push in wanting to delve into the research side of design but it is slow.

JY: Tim? Any final comments?

TB: A selection of random thoughts, I think it's more about problem solving, whether you are screen-based or print-based, good problem solving. I think it's about a good basis of education, and history. A historical context is really useful for both, I just think there is much more wealth of information for print-based media that leads to an imbalance, and I think cross-fertilisation between print and screen in the studio educational environment is really interesting but that relies on a good set of tutors that have experiences in both areas and opportunities for students to do both things, working, talking and trying out different ideas and moving things forward. I supposed that is the exciting way to be educated, supported by the matrix that you have there. It felt like a progressive way forward for education and although that particular visual which worked well for everybody because we are all visual people, I was just thinking what it might look like if you replaced all the images with screen-based examples? How would it look like and how would I stand up and talk about it? I think that will bring up an interesting problems, but I have no idea what the solutions are.

DF: I think one of the directions it could go is a bit scary, is that it could go to more filmic route, but you can get more directors, editors ...

TB: Yes.

JY: More for graphic designers to learn?

DF: No, but the graphic designer is not a director and you'll have to get somebody who knows how to use the technology.

Session ends with reviewers mingling and chatting amongst themselves.

9.6 Peer Review Transcript: Practitioner Group 2

This is the full transcript of the peer review session conducted with the second practitioner group in Newcastle.

Event	Practitioner Peer Review Session (Newcastle)
Date	14.06.05
Time	5.00-7.15pm
Location	Centre for Design Research, Northumbria University, Newcastle upon Tyne
Participants	Julia Dobson (JD) Jim Richardson (JR) Alan Whitefield (AW) Craig Hutton (CH) Will Jackson (WJ) Andy Reay (AR)
Moderator	Joyce Yee (JY)
Legend	Words in italics are a summary of discussion in instances where the content is not considered key data, as well as annotation to provide a fuller description of the session.

JY began the session before CH and AW arrives. They phoned ahead to say that they would be 10 minutes late. CH and AW arrived just after JY finished her introduction. CH and AW get seated and introduced themselves to the group. Reviewers were asked to introduce themselves and what they primarily do in their practice. After the introductions, JY handed out the definition list. After the reviewers have read through the definition list, JY gave the group its first task. She explained how the exercise will be conducted and its purpose. Statements were handed out.

JD: I think you've given me the hardest one.

CH: What is it? Share it.

JD: 'What I like best about the current usage of typography is...'

JY: Does that mean you don't like anything about current typography?

JD: Well, it's easier to find things you don't like.

AR: So you've done these questionnaires with other people as well?

JY: Yes, I've done two pilot studies and two sessions in London – one with educators and one with designers, together with today's session. They have been really useful and have identified

specific points of progress and direction. It has been interesting to see the difference between the designers and educators.

AR: Everything will be spelt wrong by us. *(Laughter)*

While waiting for others to finish their statements, a discussion started about the up coming graduate show and about NE graduates. It seemed like most students are not encouraged to stay in the NE, though it's not too difficult to employ local designers. JR acknowledged that Sumo has taken on too many student placements this year – 25, for a two-week period.

JY collects the statements and asked each of the reviewer to select a statement, read out the answers and if possible to summarise the key points.

JD read out Statement 1. 'What I like about the current usage of screen-based media is...'

- I like clarity in screen-based type. Not too tiny type.
- The restrictions caused by screen-based media creates more interesting challenges for the designer – intelligent thinking (hopefully) take over from something that looks 'nice'.
- Animation adding a layer to typographic usage.
- Animating type/sequences.
- Freedom to experiment on screen.
- The experimentation that is achieved through type intros.

JD: To sum up, I think we are a bit preoccupied with print and there's a bit more chance to experiment in screen, this sort of thing is new to a lot of people.

JR: Maybe it's got something to do with who's here in this review, we've only got one web / interactive designer and the rest of us are quite print-based.

AR: I think it's less static, more movement. It's a lot more fluid isn't it; you can animate it, move it around and have it doing stuff.

AW: I do and don't think so. With the use of moving type and things like that, I feel that people expects that it takes a longer time to load. As a result everything is becoming so basic in order for users to access it as quickly as possible. It becomes as basic as possible.

AR: It's become too utilitarian.

AW: That's the word I was looking for - for people who would like that approach.

CH: I think on the point of purely type, it's an interesting way of exploiting type, playing around with type, ignoring the practicalities and looking at a typographic thing. If you are working with someone like Will, who can explore that, then it does open up interesting things.

AR: There's a lot you can't control, there is a huge amount of copy. It leaves a lot of widows. *(General agreement)*

JY: Out of interest, what is the percentage of screen-based work that each of you are involved in?

AH: I get frustrated with screen-based to be very honest. To translate from what I've done in print into screen and to get that refinement and sensitivity is very hard. But on the other hand, nice little sequences produced and animated with type and done professionally are fantastic. Time taken up, but done beautifully. These little sequences can be great. One of the ones which appeared in D&AD was the Fish website which was done 4 or 5 years ago, it took about 10 minutes to load it up, but it was beautifully done. So it is interesting to see what you can do with type in that sense.

AW: For me, what I meant in my statement is 'let's forget about type to an extent', leave the line breaks and make it more intellectually interesting.

CH: *(Inaudible)*

AW: Will's site looks great anyway, but you still go in there and find that they have a widow on the text, but its not your fault, it's the way it is...

AR: But if you change the window size, it disappears.

WJ: That's true. Is it a problem or perceived as a problem depending on where you are coming from. You cannot allow that to occur like you would on a piece of paper. Where I'm coming from, it doesn't even register on a scale of being an issue.

CH: You can use type more interestingly at the start of a site, rather than putting the pure aesthetics of setting up your galleys of type and making them typographically beautiful. There is a point where you can carry out a clever idea, word or statement that you animate it in a beautiful,

interesting way, whether it's a short or long sequence, but at least you would have explored something you wouldn't have done on paper.

AW agreed.

CH: It provides a challenge for you to look into that. As a designer in print, you should experiment and look beyond that.

AR: That would be the bit that you press 'skip' *(referring to the skip intro action that most users will perform)*

CH: Not if its done well, not if its just a word or statement which says something about the company, where just a letter in that word changed to form a logo, that's you doing something.

WJ: This might sound completely wrong, but I'll risk it. Historically, the way that type was put together, it was all set to be a block, and it's a long process, so there was a lot of time invested in that. The whole framework of leading and all the terms that I don't understand just don't have any relevance when designing on screen. The bottom line is either: 'is it information that you can read and learn something from' or 'is it decorative and communicating some other message?' - Which is a totally separate thing for me.

AW: I think its interesting what you are saying, Will. If you go back to the purpose of typography, which is to ensure people can read as simply as possible. If you do have a widow at the end of paragraph, it looks ugly but really, does that matter? I think it does to an extent, if you got 6-point type, which I know some designers use...

WJ: Not to the extent we throw out all the design principles at the same time but it's a difficult question.

CH: But there must be an area where an overall look of the design is concerned, you must still have a typographic awareness and sensitivity.

WJ: Oh absolutely.

AW: When you are talking about screen, you are also talking about mobile screens for e.g. language usage on telephone is becoming completely different.

JR: It's all phonetic though for e.g. 'CU later'

JY: Can I get you *(referring to AW)* to read the 2nd statement out?

AW: 'What I like least about the current used of screen-based typography is'...

- Very limited use of type faces that work on websites etc.
- Type sizes - which are part of accessibility, screen-based media becomes less sensitive and crude as a media, and design in a lot of instances take up a secondary place.
- Restricted by PC system fonts.
- As above.
- Flexibility of different sized text, challenge of the user changing the size of text.
- Restricted by range of typefaces and limited to only styling certain aspects of your design. Therefore must consider which can be a bummer to say the least. (Laughter)
- Quality of type on screen, line ends, kerning

To summarise, they basically refer to the limited resource of typefaces and due to the accessibility issue, type sizes are creating more restrictions.

AR: What is the minimum size now?

AW: 13pt isn't it?

WJ: Well you should be able to change it. You can see it at various sizes.

AR: Yeah, but they put that in without knowing that every typeface has a different x-height, so 13pt of one typeface might be smaller or larger than another typeface.

WJ: Is it measured in points or in relative size likes ems? So it's measured in the relative size of the character. Then the type becomes relative to one measurement as opposed to one standard scale size.

JY: Does everyone here think that accessibility equals 'non-design'?

AW: I don't think is a non-designed site. I think we are going through a period of non-designed. What I think we should do, is make design more important, to differentiate your site from someone else's. A lot of websites seemed to look the same, with lots of text and small boxes of

images, band along the top, side and bottom. You can also talk about design on different levels as well, I'm talking more aesthetically and you also got the functionality.

WJ: I don't think if this might be useful, and I don't know if you are going to do any of these but this issue is something that comes up. When talking in terms of 'accessibility' you should also raise the issue of 'usability'. What Alan is referring to is about usability not accessibility. You can have a site that is entirely accessible but totally unusable where the usability is the human side of things, and accessibility is the machine side of it. So it's interesting that you've all pick onto this term that actually relates to the machine and not the actual person whereas a designer is relating to people and not the machine *(agreement in the group).* But yeah, you're right Alan, regarding the multiple layers on a site because sometimes, there is other stuff going on in the background that doesn't happen in print.

JY: Statement 3?

CH: 'The main difference that I find designing with type is...'

- *Offline seems more flexible and less restricted.
- Some fonts for web are restricted.
- Using alternate images.
- Users can change the size of online text.
- Page size changes dynamically.
- Incredibly restricted – you can't reach the same wide audiences or at least because of fonts – you don't need to worry whether the reader has a font when you hand them a piece of print.
- In print type can be refined to a great extent – type tends to find its own space. Line breaks etc don't seem to be able to be governed.

To summarise, screen does have its restrictions. In print, you can refine it and a key thing; it doesn't affect the end user.

AW: They see what you want them to see.

CH: It can enhance the design, but that can be argued.

AW: There's a restriction on both media...

WJ: The key thing is that everyone seemed to be very hung up on the restrictions, and everything is restricted in every way you look at it. I've put down my points (*) because they were totally the

opposite. Because on screen, maybe you produce something that has got some content in it, but maybe a few weeks later, the content in that page is totally different.

AW: Yes, it's totally flexible.

JD: Yes.

WJ: Your page stays. You can argue it's worth investing the time from the design point of view for something in print, because its there and doesn't change. Therefore our discussion about 'orphans' and what I would describe as minor points are less important. No one will care, as it will be thrown away and changed the next week.

AW: Are you talking about type or information?

WJ: I'm talking both, could be either of them, and could be both.

AW: What I was purely talking about type. On information, you are absolutely right.

JY: So is type not information?

AW: Both sides of this have restrictions, massive restrictions. Once you got a job in print, its static, and its there. I think there are 2 ways to think about type in that respect. Are we talking about type or the information that's in there?

AR: Are you talking about presenting the information? I thought you were talking about how you would set the type up, how you can control it...

AW: That's what I mean, there's 2 way you can take that. The flexibility of type on screen is you can change it next week if you want to update the information, if it's a printed document, you can't do that. You can kern it, tweaked it and cuddle it...

AR: Make it look pretty.

CH: A good example is taking something printed and transferring that onto screen. That is quite hard, even the way you set type on a page, with a headline and a block of print, to then transfer that onto web, it will look different.

AW: Will, what's that site, that you sent me years ago...relating to human evolution?

WJ: The Age of Man?

AW: That was fantastic.

WJ: But effectively that's like a page of print because it doesn't change.

AW: It doesn't matter. If we are talking about the typography on there, it was really nice.

WJ: But you wouldn't describe that as restrictive, because it's sexy and beautiful. But it's a flash based site.

(Everybody starts talking at the same time, discussing about the popularity of Flash because of the visual and typographic control provided by it)

WJ: That's why you get a lot of designers that are really keen to use Flash because they've got the control that everyone here seems to demand, which Flash will actually provide.

AW: That's why I said before; the restrictions create more interesting challenges for designers to design the content and to make it more intelligent or alluring.

WJ: Yes, a more positive way of looking at it. Thanks! *(Laughter all round)*

JY asked JR to read out Statement 4.

JR: Statement 4 – 'the main similarity that I find designing with typography in print and screen is:

- Use the same approach.
- Legibility.
- Taste.
- I agree – legibility is key, but there's not enough control – I'm a fusspot and used to fine tuning to the 'nth' of a point.
- Agree to a point – Typographic sensibility/sensitivity is harder to achieve and maintain with screen-based type.
- Don't do anything in type.
- Very little.

AR: So you think there is very little similarity between the two?

AW: Well, I agree. I use the same approach but the end result is absolutely nothing like what I wanted it to be.

JD: Yes

AW: What I initially set out goes out the window. Then there is another difference. It depends who your website designer is. If you get someone who is sensitive to type and design, then its easier to implement your ideas.

CH: Nothing looks like what you first anticipated or designed. Even a simple layout will give you problems.

AR: But that's down to the person or the designer who is implementing the job. It depends on his education.

AW: Yes.

JY: So how would you summarise that then?

JR: Everyone disagrees.

JY: Is there clearly two camps?

AW: I do start with the same approach and I never get the same result.

CH: You never get the sensitivity.

AR: Seem to compromise when you do.

CH: I don't know if you get hardened to it and start accepting it. Then you speak to someone who is in the know and take his advice.

JR: When we are designing something for print, we don't think about the restrictions but there are some restrictions there in some ways, you may want to design something but the printer

cannot actually produce it. So you have got restrictions in print as well, but maybe we are just more aware of them. We just don't think about them as restrictions anymore.

JD: Are we just restricted about our lack of knowledge?

AW: Absolutely.

CH: I would say challenges rather than restrictions. But that's just my train of thought and where I come from. I'm purely print orientated. Web – I'm just trying to keep up with it. It's not something that bites my bullet or gets me excited. If a job comes in, I'll have to do it and explore the area but I'll probably won't challenge it in the same way I would challenge a piece of print.

WJ: I can't really comment on designing for the print side of things, but it seems quite often that when we work with existing material that's been designed for print, what you have to do is to take the elements of it and then try to maintain the essence but to do something different. And it can't be the same because of all those reasons we discussed before.

AW: If you really have a passion for print, why don't you design one?

WJ: When you see sexy stuff on paper, and books, and nice things you can pick up and hold, yes, I would. Absolutely. The challenge is to keep some of that, in a way that you can't touch it and it is on screen and you've got to use Arial and Verdana but there is a lot of stuff you can do beside that.

AW: But you didn't on our site.

WJ: Your Flash site?

AW: Is it in Flash?

CH: Yes it is.

WJ: Your site is in Flash *(laughter)*

JY: It's all controlled. You can kern it and cuddle it!

WJ: Exactly.

AR: In our company, I've just done a brochure and one of the guys who is putting a site for it have just gone and done it without consulting the printed material.

CH: We did the same thing, with Will, giving him our brochure to work with and then it was up to him to take elements from the brochure and relate it to the medium. It's trying to create something else with it.

WJ: We were trying to add something rather than copy what you created.

AR: My turn. Statement 5 – "One of my key considerations when using type on screen-based media is...'

- 13pt minimum size – can destroy appearance / design (target audience).
- Legibility
- Accessibility and fonts for end user.
- Accessibility
- Looks right, seems appropriate for project.
- Typefaces (limited selection), accessibility – screen-based media becoming less designed from aesthetic and intellectual point of view and more focused on how easy everything is accessed.
- Clarity, interest, intuitive.

JY: Is everyone worried about the accessibility issue or the push towards accessible websites?

AR: It's because you'll have a little old lady who's got two fonts on her machine.

JR: Have you seen the new Microsoft fonts?

JY: I've seen in on a website. It looks quite nice; John Hudson has designed some of the typefaces. It does not look half as bad considering it has come from Microsoft.

JR: Another issue is when they will be introduced – it will have an impact on it as well. If someone has got an old computer or new one, they will have different fonts in your basic PC.

WJ: Just a flip side to this discussion, two days ago, we were in the Blind Society of Newcastle and we had a completely blind lady trying out one of our sites. She's been taught how to use a special keyboard, like a touch-typing indents, she's got bigger ones so that she can find it on her

keyboard. She can type faster than I could, on Microsoft Word, just writing stuff, which was quite impressive.

AR: But she can't check it.

WJ: No, she can. It reads out letters and reads back sentences and she knows the shortcuts keys to do a spell check, which reads out what the spelling mistakes are. And it did not actually fix it but she tabbed back to the word and changed the word manually. It was awesome. Totally great. I said to her, did you realised that you were looking at the full graphic version of the site and not the text only version. So, it could have looked like anything at all, didn't matter to her. That's this accessibility thing. It's coming through.

AR: But could she read that on a website?

WJ: She can open the one we were testing with her and she could read through it, because we made it 'accessible'. But the design and the whole message that was conveyed visually were totally lost on her, obviously. But it could have looked like anything at all, whatever you wanted it to look like. So on the flip side, its totally accessible, you have complete freedom on how you want it to look like. Which is the opposite of what you all are worried about.

AW: Well, I think we've gone to the extreme side of it; it doesn't matter about the typography, as she could not see it.

WJ: Well exactly. But this accessibility thing is getting everybody all wound up.

AW: I think it's a middle ground. I told you about Alex Tefler's website which we had to include accessibility features, he is a photographer! How far do you go?

JY: A lot of accessibility issues are based on common sense. A photography site will not attract blind users!

AW: Absolutely. For e.g. Darlington Borough Council site, where you have so many people trying to access the site. There was no design consideration access the headings to help user navigate.

AR: Sometimes a little information is a dangerous thing. When somebody said that your type has to be 13pt type, it is followed without thought.

AW: But that happens in print as well. I find that in more and more examples.

JY: I would like to move on from the issues that we have been talking about, which has been very interesting. As you know today will be the opening of the graduates' design shows. From your experience of interviewing and hiring new graduates, how would you rate their level of typographic knowledge? Do you see an increase or decrease? Do you see a shift in skill expertise?

JR: Depends on the university.

AR: Depends on the individual as well. Sometimes you will get people on the same course and you will get some people who will set type really nicely and some who's really bad. It's down to how sensitive they are to it. I was fortunate enough to get good training in Alan & Craig's company.

JR: It's not just graduates, we get people with lots of experience, we had someone come in at a Creative Director level and they just didn't know what they were doing with type at all.

AW: I know someone who I considered to be a really good typographer but if you look at her recent design, its all Helvetica, situated on the top left hand corner.

AR: And no kerning, so the letter would all touch?

AW: Is that right just because it happens to be in fashion?

AR: It's knowing when to use it. I know somebody who will do that all the time, for any job. It's not sensitive to what its about. It might be something for a kiddie's crèche and its Helvetica, minus kerning in a box.

CH: But a key thing for students is showing what ideas they've got and also their awareness within their portfolio of a variety of looks and ideas. The problem is, you might have a look in someone's portfolio and it looks great but then you realised it's the same look other students have as well. But if they have a multitude of ideas, it means that they are taking on board different things. They will cultivate their thoughts towards that but if they are just following a style...

AR: It's the ideas that are important.

JR: It will be nice if they have got more than one typeface in their portfolio.

CH: Exactly! That's my point.

JY: Is that quite common?

AW: Well we went through a phase with Helvetica.

JD: I don't think you learn about typography until you start learning to do it for real.

AW: I don't know about that.

CH: I disagree.

JD: Well you learn the basics of it and its history. Speaking from my own personal experience, I wasn't able to refine any type that I was doing until I started working, understanding and using it more than when I was a student. I was just sticking stuff down on safe mat, aesthetically it was fine, but I was only looking at it from a pretty picture point of view.

JY: So what is it in the real world that provides this training?

AW: I think it works in two ways. If you do get somebody who is really good in typography when they are studying, they can sometimes be pulled backwards depending on where they end up working, all their creativity in typography disappears. It's down to the individual, as Andy said. If you let somebody go, they might actually do something really different. It's difficult, especially in the North East. This creative hotbed that we have over here *(sarcastically)*, is probably not the hotbed for typography in this country.

JD: What are we going to do about that then?

AR: But sometimes you react against it, we were talking about this the other day. When people around me were using Helvetica, I deliberately did the opposite and used all kinds of serifs typefaces just to do something different.

AW: From a purist point of view, I think students will have less understanding from metal type and its refinement. But on the other hand, they will have more ideas about the media.

CH: I think you have hit on something straight away. As soon as you come onto a computer, as a student, you just experiment and play around, so your basic understanding of type and how type

works is lost. Character spacing, 'track 10- its done', no its not! It could be track 10 there and track 3 there. They are not taught the understanding of the shape of type. It's something that should be a fundamental part of the course and should be taught straight away.

AR: What I like about the course here (referring to Northumbria) was being taught the metal type, the principles of what type was, the hot metal and how it worked. Because you understand where it came from, you understand...the balance.

JR: Its interesting seeing how they teach design in Holland that they have to start by learning how to write with a calligraphic pen.

AW: I don't think that's fair, because I'm left-handed. *(Laughter)*

JR: They can understand why the letterforms are the way they are and how they can fit together. I think you see that in Dutch design as well. It just seem that they are a lot more educated about type than here.

AR: When I started designing logos at Craig and Alan's company, I would be asked to print them out and turn them upside down to check on the spacing of the type. Once you learn those principles, they help you.

CH: Its too easy to use the computers to set the tracking automatically.

JD: Just because you can, doesn't mean you should.

AR: Like the 'Helvetica people' you get into a system that is safe and you're in your comfort zone.

CH: As soon as you use Helvetica, all of a sudden, your jobs start looking like so many other jobs. It's very much a British look – simple and easy.

AW: Yes, it's their comfort zone.

JR: But clients as well. 'Why can't you do this Arial instead of DIN, because we have this typeface on our computer.

JY paused the conversation and informed the reviewers that the second part of session would begin. AW and a few reviewers took this opportunity to go to the bathroom. Discussion amongst JY, JR & JD

regarding class sizes and the introduction of more typographic classes or project. Due to huge class sizes, JR was not surprised about the quality of current students. He shares his experiences in Dundee University where he did his degree course, and it was only 17 students with 5 tutors. JR mentions that at one time there is 70,000 professional designers and at the same time, there is 60,000 design students.

JY introduces the research, research questions, data collected so far and the framework.

JY: What are your first impressions of the framework? You can start in the general sense or more in detail, if you like.

JR: Where do you see the other bits fitting with your framework, like the imagery, and the client's brief? How do they fit?

JY: Imagery? In terms of other design elements?

JR: Yes, because type is just one of the design element.

JY: Good question! I don't see it as something completely separate. But perhaps that is one of the issue I have to address, which is how it fits within a design curriculum. This is just a typographic viewpoint and I do expect to deliver the framework in a 3-year course. I see it as an approach rather than a set of rules.

JR: Yes, because you can apply the same approach to other areas of design as well.

JY: Yes, I've noticed that a few people have made that comment and do think it can be a generic framework for other areas. Why do you think of it as an approach for not just type but other design discipline?

JR: I can see it how it would work in an educational environment to teach people, but I think it's more of a combined thing, and when you are designing now (in practice) its more subconscious.

CH: I think so. There are so many other elements that will go in and affect your framework. That is one aspect of it. I don't know where you are trying to position this. What are you trying to achieve with this? To me you are looking at one small area in a larger picture. Who are you directing this towards? What is the purpose of your thesis?

JY: It was originally devised for both education and practice. I was a bit greedy. But it has moved to it being a purely educational focus.

AW: Yes, I think it does.

JY: Saying that, there is a practitioner in me. There is a determination to adapt it and make it a practical tool, as a post-doctorate research. At this moment, it is designed specifically for an educational environment, for educators and students. The framework is used as an approach, but then the plan is to distil down some tools for educators or students.

(Agreement or understanding from group).

AR: Your matrix is almost what we were talking about earlier when we said that you needed to understand where type has come from. You're been taught about the letterforms and you then explore the theory and application. That's almost the journey you take as a designer.

CH: Which should be fundamental in courses, and if this is for education its something you have to reiterate and should be brought back in.

AR: It's almost a curriculum design.

CH: When you are talking about type and trying to relate it to multimedia, you are exploring the conflicts and distortion of type. However, that's purely only one aspect of it. Make that the main focus of it but you have to consider how type works with an image. How type works to build up a story. Is it working on the first hand or working on the second hand? Is it supporting or enhancing? All these things, you will need to address in your dissertation or thesis as an educational purpose. If you're going to teach students, you will need to pull out your four points here *(the genres)* but then take them on a journey with you. Explore it by showing it. You're very informative and textural yourself, there's nothing visual. There should be typographic information, i.e. explanation in this as well to enhance all the work that you have done so far.

JY: It would be in my thesis. I do have an extended version of that matrix but I won't bore you with the detail.

AR: And that is the journey that you take as a designer. It is only when you understand all that, then you can exploit it.

CH: Make it a positive tool for teaching.

JY: Julia, any thoughts on the framework?

JD: Well, I'm not going to stroke my chin and pretend to understand because you've completely lost me half way through there and I've had read your papers before coming in the hope that I might understand it. It seems fairly basic that that sort of thing is what you will go through on a graphic design course, which I did, you learn about type, placing it and where its come from. But other that, I don't think I can help you out.

AW: So within that matrix, you have 'Meaning' there. Can you go back to that slide? Have you taken that any further? Is that irreverent to type?

JY: In the Meaning section?

AW: Is that in it, is it talked up?

JY: Probably in the Context section, because you will use typography to question and manipulate language itself, the way grammar is used.

AW: Yep.

AR: Word within words? Things like that?

JR: It's like you've got the skills as a designer you really need to know but then your overall skill is answering the question, that's one of your tools.

CH: Yeah.

AR: It's your way around to solving the problem.

JY: So where do you see this fitting it?

(Laughter all round – trying to answer a difficult question)

CH: To me, type is like putting your shoes on. As a designer, it's something that you just do each day. It comes with the kit. The difficulty is actually answering the brief. It's a tool that every designer just carries around. So that *(type knowledge)* is fundamentally not steering the designer.

AW: That's why I say it's more educational. It is about learning that process.

JD, CH: Yes

JY: Will?

WJ: I would ignore all of the comments made before about the technical stuff, all the accessibility, its not relevant to what you are looking at, as far as I can see. And it was put as an anchor in the past about what you are writing about, because all that stuff would have changed by the time you come to finish. And I don't see how it would fit into your framework, other than 'Context' – maybe.

AW: Yeah, right at the end.

WJ: You are showing us your slide and you actually zoomed into your slides to show use better. If we are looking at content designed specifically for TV, then the fonts size is not an issue. It won't be like looking up on the web browser on a PC. It would be a totally different experience. And I think it wouldn't be of any use to you to try to accommodate all that. I can see the framework and grid *(matrix),* the way it is split up makes a lot of sense, certainly it ring bells with most people here.

AW: We assumed that you were talking about website and that kind of media, rather than film credits. For e.g. the film, 'Catch me if you can', it has beautiful title credits. The typographic work was just beautiful, and that's where type works beautifully and it becomes a small movie in itself. But after going through all this media stuff, it seems like you've pull back and gone back to basic.

CH: Is that something that you are adding on to it?

JY: I realised I had to go back to basic before being able to address this point. I was much more prepared to focus on the screen medium *(local principles)* than the global principle.

AW: Can you simplify this bit?

JY: That's a good comment. Everyone seems to say it's quite complex. *(Referring to the Hexagon diagram)*

AR: The way I interpret the chart is you can't put a line down at the centre *(referring to the division between global and local principles),* because you need everything on the left.

JY: Which is why I chose a hexagonal shape, so that it all fits together.

AR: What I am referring to is that line in the middle *(dividing between the global and local principles).* The content on the left *(global),* I'm a bit more confused about.

JR: You need to have a line on the right for the brief or the question, and you're answering through the principles of screen that you learn.

AR: Because its about solving the problem, at the end of the day, or communicating something.

AW: Yes, communicating, informing or educating.

JY: So are you suggesting that this section *(local principles)* is more about understanding the context of the brief, the client and the user?

JR: It should be 'Global skills' rather than 'global principles'.

CH: 'Strategy'?

JY: What about the separation between the two media? I've had questions raised regarding the need for its separation. The framework is about integration, integration of media, and integration of skills. Do you still think then, that it is ideal to keep the media separated?

AW: I certainly think that they will start merging. I don't see why not.

JR: It's so broad that you cannot generalise that much.

JD: Do you mean terms used in typography should be used across the board? Which they do and a lot of the languages used would mean nothing to someone who doesn't understand hot metal.

JY: Its not just the terms, but the approach and knowledge.

AR: But you are getting websites where you are getting PDFs, which you download and print out.

WJ: But you also get websites that you print out and it bears no resemblance on screen. When it's been indented like that, it's not just an accident. The difficult that you got is the different media: TV, telephone and computer. The interactivity with all these devices is different. And the requirements of the fonts and the typography will be different as well.

JR: People designed fonts that will work across different medium, for e.g. I think Peter Bilak did a version of Deavoux (?), which is to be used on *(inaudible),* and then he's also got a print version.

CH: That's an interesting point. Is type designing something that you should look where it's about creating type for both media? I think that's something that it isn't coming across here.

WJ: If you are going to focus on screen medium, you need to identify the type of screen that you are referring to.

AR: Yes, because the game graphics is very much like the film content.

WJ: And that's coming through in TV as well, which has a much lower resolution as your monitor, so you can get away with much less detail, as some elements will be completely blurred compared to your PC. But that's probably a lot of extra work from your point of view.

CH: How long do you have left?

JY: Not long! Your comments will be used to refine the framework but also used to suggest how it can be developed further in the future.

WJ: Maybe one suggestion for you is to treat the screen medium as just CD-ROM or DVD, because you have the same parameters you will be using. You can put in any text, any size, any shape as you would do in any of the graphics packages used, and you can present that back exactly as what you wanted it to look like. You don't have to worry about the restrictions of the Internet, telephone or TV. From your point of view, that would be a manageable way of dealing with it.

(Pause, JY shows the Hexagon diagram)

JY: Possibly. Do you see it a valid representation of the media?

AR: It'll probably be more like a triangle, to come together.

JY: To converge?

AW: Yeah, I think it will converge. What are the two empty hexagon connected to the print one?

JY: It was just to indicate that there are areas where it has content, but I was not going to concentrate on it for my thesis.

JD: So currently are multimedia designers in university taught anything about typography?

JY: Not a lot in this university.

JD: Really?

JY: Depends on the structure of the courses. There are some courses that teach multimedia as a pathway while some as a separate course.

JD: So based on what we were discussing before, the multimedia students are going on what they've seen and they like.

AR: Not based on history.

JY: They get small snippets. One lecture worth of 'how to choose a typeface' but not nearly enough.

AR: But you need all that background. You need that before you design anything.

JY: I felt it was essential for any communication designer to have this typographic base. One of the main questions is 'do they have the time?'

JD: I just made the assumption that the students would know about typography.

JY: It very much depends on the course.

WJ: When you were at art school, doing the rounds about how students are doing in their placement, I wasn't commenting at all because we seemed to find a lot of the multimedia students

seemed to know a lot about software packages. Its not about 'oh, I've done this product or a website that does this for somebody', they are the real tools.

JR: Students shouldn't have CD covers entitled 'I killed my girlfriend' in the portfolio.

AR: When I first started my course at Northumbria, they only had 5 computers and you were discouraged from using them, and to design on a pad. It's a tool to create what's in your head.

WJ: What's the difference between the graphic design students and the multimedia students that you have worked with?

JY: It think its simply the way the course have been taught, the GD students here were good with the design process, not just their typographic skills but going through the sketching phase, developing concepts, going through to execution. But as the project was about interactive trailers, they were stumped when it came to transferring their ideas into screen. That's been a key stumbling block, not able to use the software. And they did not have much experience working with screen; hence everything they did was very static. There was no pacing, no editing, nothing that you would need to take from the film grammar. Typographically they were quite strong, stronger than the MM students, because they had more training. The MM students just got on with it and were not too worried about not doing proper typography, because they did not have a prior knowledge to begin with. In that sense, did not struggle to translate their idea onto screen.

AR: So if you had a hybrid of the two, you would have a good result.

JY: Yes.

JR: That's an interesting idea for your system, as well, is not that is should be labelled 'global skills' but rather 'basic skills' because you always had to continue to learn.

AR: Is it skills or just knowledge?

JR: There would always be things coming in from different angles.

AR: It's constantly growing isn't it?

JY: Another interesting point was that when I created the groupings, it was based on an educational model, the sequence of learning typography is about learning the form, then moving

to learn how to set type, then moving to learning how to choose the right typeface and moving to playing or manipulating with the medium, the paper or screen. Both sets of students just worked in two realms (content and meaning). They didn't really see type as an expressive tool, just text that they had to include in their design.

JD: They deal with the words.

JY: Yes.

AW: So then, you move into informative rather than...

JY: Most of them only used it as text, which was pretty disappointing, even though we stress it was a typographic piece. Some of them did try to pick expressive or relevant typefaces for their design. And that was mostly from the graphic design students. They rarely moved into the realm of context or form to come up with solutions.

AW: Its funny that it's crossed back over, moving into the inspirational realm.

JY: So one of the questions is, should there be a sequence of learning prescribed at all?

AW: I think there is, hearing what you are saying, absolutely.

AR: But there is another part to that, 'meaning' is what it is saying. You have to understand what the messages are to be able to address them.

JY: This was one of the results that were derived from how they use typography. So, that brings into question why do we learn the Form first? For e.g. kids in schools as young as 6-7 year olds are using PageMaker to create pages and selecting typefaces. Their perception of typography and typefaces will be completely different from our current students.

AW: Yes, I'm sure they will.

AR: That's why they come to university, so that they are taught how to do it properly.

AW: It's not just kids but people at home using their PCs, does it make design much more important?

JD: Yes it does.

CH: If students here don't have much of a clue about type and they are design students...

AR: My father-in-law has a PC and is able to produce leaflets, but that doesn't mean he can design.

CH: That's the problem as well, though for design, the general masses have access to the tools.

AW: But that actually makes design much, much more important.

AR: But anybody can be a designer, as long as they have a PC.

JR: What were the other reviewer's comments?

JY: Various different comments. In terms of the other designers, they also see it working in an educational context. The point where they might find it useful is as a reference tool or a training tool. But they definitely don't see it as a day-to-day tool. They do see this matrix as a possible curriculum guide and they see it moving beyond the subject of typography, to be applied for other design discipline.

AR: You can take that on for the design process as well.

JY: There is another issue I would like to bring up, as designers we don't normally have the time to sit and reflect about our own design process, the only time you would need to do that, is possibly when you are writing up a design proposal and possibly need to justify to the client the design cost. Within design management, there are different levels, strategic and more day-to-day level. And where this framework could work, is at the strategic level, where you can use it to describe your design process.

AW: Yes.

AR: You can use it to...

CH: Present it. You can use it as a presenter for example before and at the end of a presentation.

AR: You can use it to educate your clients.

AW: Yeah.

JR: I don't like educating clients, we tried.

JY: Has anyone tried educating clients?

AW: Yes, we did a long time ago and then gave up. It comes down to how much it cost.

AR: I think they used to do it in Scotland, in NE6 where they tried to educate the client on the design process.

JD: Sometimes it get the clients thinking about their own company and what they are trying to do. When I explain to them how I've got to this certain point, and I'll have clients who'll go 'Oh right!' I said, 'I don't professed to know about your company', and they would respond 'you seemed to know a bit more than we do!' It's just the way you think about things and how you describe it.

CH: Depends how serious a player the company is, if they are big enough.

JY: How about tender processes? Sometimes you will need to write quite a bit about your own company and your profile.

CH: You're opening up a can of worms now! *(Laughter)*

JR: It's the level of client that you get, you'll have some executive that you need to get design approval from and they won't understand why.

WJ: And they sign it but still want to change something, right?

CH: But getting back to the question, you can sell at a strategic level depending on what job you get. Say you were doing an identity for a certain client, and then obviously you have to be speaking the same language as the client. You speak to Sage, doing their annual report; they are playing at a different market place. Tommy Tippy Mayburn, they are a completely different player.

AW: What you will be doing is using it as an educational tool in industry.

CH: Well, yes. You are just introducing a process in a form that they can understand where you will be going with the design.

JR: It's funny, I went to a DBA talk last week, about doing ISO9001. This big company down in London did a process map as part of the talk, showing how they worked, and they found that a lot of their clients really liked it, because they can understand their process. Clients won't understand lots of picture and arty farty stuff.

AR: A lot of the times, the client doesn't know but they are too embarrassed to ask what the process is. You talk about a wet proof or a press pass; they don't know what it is.

CH: I'm not even thinking about the process, I'm speaking about how you understand the company and the way you are expressing that. Its how you are structuring your design and presenting your thoughts in design, so that you are actually inadvertently educating them why they are getting this product from you. You're placing yourself at a level where they believe you are producing good design. 'You're giving me something, a product of value rather than, I'm sitting here and listening to you at your level'. You've just sold yourself straightaway. Your structure would be the same, as we would talk about the form of the typefaces used, the colour ways. So you've got the right approach, when you go back to basic skills, that's how you would break that down and sell those things.

AW: I think you're totally right.

JY: So it's something that could be use in practice *(jokingly)*

AW: How much is it?

JY: Do you ever get a chance to go back and evaluate your past projects?

CH: Yes, an example is for Beaver Brooks, we discussed how well the branding worked and what effects it has for the consumer and how sales increased.

JY: Do you often use that to present as case studies to client?

AR: Oh yes, all the time.

JR: That's focusing on the result, the client then will know why this is good design.

CH: It's the effectiveness of the design in that specific market place.

AR: And that's answering the brief.

CH: But we don't do a lot. And it depends on the client, the size of the client and their mentality. It's difficult to find at that level.

AR: If someone wants a mailer and wants 30% response to it, that's easy to measure.

JY: Can I just finished up by looking at where certain parts of the framework can fit in the different parts of the design process. It is to draw out our implicit knowledge in the design process. You should recognise the different stages, it starts with 'investigating', 'research', 'exploration', 'development', 'realization', 'evaluation' and 'communication.'

CH: So what do you want us to do? To talk about it?

JY: No, that is just to draw out or remind you of a possible design process. We talked about where the framework would be used in the communication stage, where it could be used to educate a potential client.

CH: I'm sorry you've lost me.

JY explained in more detail what they needed to do. More confusion but eventually the reviewers understood what they needed to do.

Summing up. Last comments. JY asks for final comments at the end of the session.

AR: Teach multimedia students type. That worries me hugely.

JD: Seeing that young children are learning to choose type at a young age, you really need to simplify this and get it into nursery school. (Laughter all round – joking about how it might be taught to 3 year olds)

Session ends with reviewers mingling and chatting amongst themselves.

9.7 Interview Transcript

This is the full transcript of the interview conducted with Teal Triggs, conducted on the 31st of May 2005.

Event	Interview
Date	31.05.05
Time	9.00-9.30am
Location	Teal Trigg's office, London College of Communication
Participants	Teal Triggs

The interview started with JY describing the framework to TT, but this was not recorded. The transcription begins after this.

Teal Triggs (TT): You've done 'form', 'content', 'meaning', and 'context', although I might argue that meaning is the result of 'form', 'content' and 'context'. If you bring all those together then, meaning is hopefully established or a process of interpretation. One of the categories that you don't have here is how the audience or the reader is interpreting it. How designers have to engage with that in order to get the meaning operating, whether it's relying on their own reading or the audiences' reading. You have the idea of readership here...*(referring to the 'context' group)*

Joyce Yee (JY): Specifically to the reader's interpretation, you mean?

TT: Yes. How is the audience actually reading all this? In other words, if we want to established an online youth magazine, that's going to be different from establishing an over 65, pensioners magazine. Designers have to make considerations for that target audience. Where does that come into play, when we are dealing with that aspect? Or is that part of your framework?

JY: I think it will be in the 'context' section, because we are looking at the...

TT: Readership

JY: Yes, readership

TT: Should we wait this long is we are doing this as a kind of a stage development?

JY: I don't think it be a stage development, based on how it is laid out in the matrix. What I do see is as a...

TT: As a level.

JY: Yes, as a level. For my purpose of grouping and categorisation and I do see it as a linear progression, I don't want to advocate a sequence. What I do think is you do need a high level of skill to be operating at this level *(referring to the 'context' section)...*

TT: Effectively.

JY: Effectively. It does not mean that it cannot be introduced earlier. And yes, we do start to learn 'form' first, but how many of us remember and use type in that manner? Especially when taking into account the changes in how younger people are experiencing type, being exposed to typefaces at a much younger age. That brings into question where the genres fit in the context of different student experiences.

TT: And that's why I think student profiling is going to be key to making the most effective use of this framework. You've got to understand where your students are coming from because increasingly we are getting mature students, coming back to education, having for whatever reason not completed their first degree. This is part of the widening participation initiative. And with that, come not only experience, but also baggage because you are entrenched in a certain way of looking at things. I think the younger students haven't had the experience to fix themselves in terms of receptivity and the way of doing things. It's interesting because from my perspective, context is still important and the way I teach and I think it's because of my background, going from a designer and in a way rejecting the practice to some extent. Although not completely as I still have the Women's Group, but I've become much more embedded in the theoretical, linguistic and language aspect, that I think the way that I teach is getting the students to think of the bigger picture initially. It doesn't matter at what levels they are at, so at least they have this *(referring to the context)*, and then you have this *(referring to the other groupings)*. How then do we start developing these other aspects of the project, so that we are being effective in our communication? That's why I think it would better as layer as opposed to stage development. You need a 3-dimensional model. *(Laughter)*

JY: Yes, I know! I wanted to include a level where it is mapped to the teaching process, but it was getting slightly complicated.

TT: It would be interesting to maybe take one of these sections and map it in relationship to these because the factor of time is important. You might be able to teach this as you did in your one class, with one semester as an introduction but you would not be able to go into very much in

depth. What happens if you teach it over a 3-year period, where its having to reinforce itself at different level, so that their level of engagement each year, is becoming higher and higher? By their final year, this problem of conflict that you are discovering in your classes will disappear. That synthesis would be taking place only if that foundation is reinforced throughout. I think that's just the basic educational principle. And again it moves it away from compartmentalisation. 'Oh I'm going to learn how to draw the letter 'A', this is how the Roman alphabet does it. And all of sudden I have to work on a screen, can I draw it the same way as I drew it here?'

JY: That is one of the problem I have with the current model, which advocates learning from 'form' first – I think is a much more difficult start compared to learning 'content' first, which we are all familiar with. Do you feel that the model should reflect the learning model rather than the teaching one?

TT: Again, it's just me going back to very pragmatic aspect. If I had a class and I'm getting ready to start a new project with the MA students and if this was embedded into the project, how would I actually do it? I've got some interesting categories, knowledge categories, which I hope at MA level, they will be operating at this level *(referring to the 'context' group)*. How then do I get the students to engage in depth at MA level, with these particular aspects of the project? For example, we are now doing politics and design project. So the first thing that they will be doing is to trace a news story for a whole week and see how it changes. In that context, that's the newspaper medium or it could be an online blog or something. The content is being looked at in that context and then they have to go back and rethink how they are going to communicate their viewpoint about their story in whatever medium they choose. The context shift, but they have to go back to the formal properties in order to realise the meaning to a targeted audience.

JY: Do you think it would be useful to provide different versions of the framework to show how the relationship of each categories shift depending on their level of knowledge?

TT: In first year projects, students will have less information about the 'form' and 'content', so your emphasis may need to shift accordingly. But you can still introduce these aspects. I think that's what you were finding in your classes that the model that you were hinting at the second year. I felt as a second year, they would have a bit more knowledge here *(referring to context)*, but then they have not come through a system where you've developed the first or final years of the programme. So their starting point of their knowledge base is different.

JY: Yes, that has to be taken into account as well.

TT: Yes. You have set yourself a really interesting task. I don't think it's unachievable.

JY: I don't think it's a prescribed method, that's what I am trying to get at. I want it to be usable and advocate an approach that will enable teachers to apply the content as they see fit. It might be useful in mapping out the different levels of emphasis.

TT: Are you taking into consideration, in thinking of the educational context, of key skills and benchmarking? That will affect how we know if the students have achieved to a certain level. You may want to look at level benchmarking of key skills in year 1,2 & 3, and see where the emphasis is. That's existing knowledge, why reinvent the wheel? That's a group of art and design practitioners and educators developing those.

JY: Do you know of any current existing ones?

TT: The government has, I'm sure your library, and your institution will have it or the course director.

JY: Is it the QAA?

TT: Yes, it is the QAA.

JY: Do they have any subject specific?

TT: They do have for Art and Design, but it would be Art and Design as opposed to Graphic Design. But I think the key skills ... ask your course director for the course benchmarking and your key skills requirement for each level. Its very clear as to what each level can achieve. Then you can map that to what you are asking or wanting to achieve or what your expectations would be if you tested students against this framework on those existing benchmarking. You might prove that these are wrong for this subject.

JY: I do know if they would have anything specific on typography...

TT: No, they won't. It will be generic because I think what they do, is to make it generic for each programme to manoeuvre accordingly.

JY: In terms of teaching processes, what I'm doing for practitioners, is to get them to map out their design process, based on my adaptation of Borja de Mozota's design process. I want to ask if

they are able to think about at which stage they might be using this framework and for what purpose. A practice-based design process is probably easier to draw out than a teaching process. Can you map your teaching process?

TT: Can you articulate what you are doing intuitively? *(Laughter – pauses, thinking).* That's interesting. I mean in a way its not dissimilar with what you will be doing for a design process, because you would start here, with you brief and you would ask students to develop different kinds of considerations in relation to that brief and what is it you want to achieve. What I tend to do, again I'm just giving a pragmatic example, is that I, usually as part of the briefing session provide this (referring to context), so that they understand where they might be heading, giving them some guidelines so that they are not shooting in the dark. Then I give them the brief. I will ask them to read it in class, and then go over it point by point. I usually have a tea break, where they go away and look at it, and come back with any questions. When they start that process, they then begin to go through these steps of 'research', 'exploration', 'development' and so forth (referring to the Borja de Mozota's model). So, I wouldn't say it's massively different in terms of the teaching process. You might have more checkpoints than you might do in a design practice, which is running against the clock, these checkpoints would be built in the review of the student work. We will have the individual and group crits, and then information is fed back. So you may be doing this a little bit more than in practice, where in most cases you move quite quickly through a project.

JY: When you are teaching at the different stages, are there any differences in your approach?

TT: It's helping the students along but again there's should be flexibility because depending on your students, they may negate some parts *(referring to one part of the process).* But conversely, I have students who do too much research, which leads them not having enough time to do the development work nor do many of them use the evaluation stage actively, what we would call reflective practice. So again it's not as even in terms of how it is represented here, which depends on the student's understanding of the brief. Some students will figure out the idea immediately and they will completely skip over the research and development part, which is dangerous and we do often get them to stop. I think its emphasis in terms of the process and responsiveness towards the students' ability to engage with that process, which depending on their experience will absolutely be different. I think that's why you have to have individual tutorials and I've always fought to maintain the time for that, even if it is only 15 minutes. It's better than nothing.

JY: How do you see the usage of the framework in terms of tools within the process?

TT: Tools such as?

JY: Tools derived from the framework, such as a checklist of what the students need to look at, or at the evaluation stage or at the communication stage where the project is described in these terms.

TT: Yes. They're something like a crib sheet, a reminder for the students to review what they have done in relation to a set of bullet points or a checklist. *(Pause).* Again what I think is interesting in what you have done, is that you have 4 categories, which are very clear. In terms of teaching, these are quite accessible and would be useful as an aide memoir just as they are moving through a project. With something like this, depending on your level again is reminding students to read. It's always good to have balance, value and focus. These are different ways you can manipulate letterforms and the layout, which they often forget in terms of experimentation. This is a good way of saying 'don't' forget', you got this whole menu here that you can look at to reconsider your position. I don't know how much the student will refer back to something like that. The good ones obviously will.

JY: It doesn't matter how good the tool is, it's how easy it is to use it.

TT: Yes. I think we are in the process of developing online courses on design, which I have mixed feelings in terms of effectiveness across the school. This would be useful for something like that, where students are more clued in to looking at documentation and props for considering their work where they don't have a tutor or an individual session. How you might describe something in terms of hierarchy where you could quickly draw hierarchy than describe it verbally - that's where I think it becomes interesting. Maybe this is more about reminding the tutors of the kind of vocabulary that they might use to aid student learning, rather than the students themselves. It's important for students to have as part of their appendices. I think more and more student handbooks are doing just that, instead of having 2 sentence descriptors. It's useful from that standpoint. Talking in terms of tools, if you can figure out your 3-d model, as examples for students to refer to, it can be used to highlight that communication is a very complex process. By presenting them with a model that demonstrates this complexity through these layers, it shows them what they need to consider as a designer if they are going to be an effective communicator. It becomes a teaching tool in and out of itself. A model of good practice of what to consider, particularly when you are moving across platforms.

JY: Do you think the 3-d model with its 2 layers, probably the 3rd axis might be where you could apply it or in terms of time, I mean there could be several models here...

TT: I think there could be. If you have 3 layers to develop this framework for the students, you are quite right, the whole layer *(referring to the genre layer)* needs to be taught in the first year. But it's how in-depth you want to teach it. That's where your model will shift, in the different emphasis on each of the categories.

JY: As a part-time practitioner, what do you think the framework could be used for in practice? Taking into account in its current form, it is very much an educational model. I know that it is extremely difficult to get practitioners to use any kind of framework.

TT: Yes, they have their own system to work with and they know how far they can push themselves in particular aspects and still deliver the job. So yes, it's highly individualised. But I think you'll find more and more as students are coming through design research methods, which is really big at the moment and is growing in popularity, that you'll find it is going to effect practice. I can see some of the MA student that I had 4, 5 years ago who now own their own studios and for them, research is a key component to what they do. I would say, 10 years ago with my ex-students this will not be the case. I'm probably slightly outside of the practice realm, because I've always been interested in research. What we do at the Women's Research Unit is very research led. We're doing research projects, so we are not a commercial practice, that's the difference in that. We are educators as well, so we're slightly different. But I would say that the 'exploration' part became popular which is why I wrote a whole book about it, with practitioners. However, it ended up a process that became a style. But now, I think its having an impact on how younger designers are considering that particular aspect – exploration and experimentation as an integrated part of their commercial process. I think they are allowing time even with a client's deadline. They are allocating a period of time to have a much more experimental way forward. I think clients are looking for that as well.

JY: Because it adds value to the design process?

TT: Yes.

JY: How do you see practitioners taking to this framework?

TT: It would be interesting, because I don't think any practitioners like to be told...

JY: Exactly *(laughing)*

TT: I would say it's a design process and ask them whether or not if they would explore that in relationship to their current design process. It would be interesting to see whether or not if they can tick boxes and say hand on heart, that they actually do go through each of these stages in one shape or form or skip 2,3,4 and go into 6. Getting them to articulate that would be interesting.

JY goes on to describe some of her feedback from other designers.

TT: I would be interesting to talk to someone like Lloyd Northover – it's a big global corporate identity company to see how they would engage with it because they are very keen in this aspect. They are also involved in reviewing this university's vision statement and I've been involved in the process that they have developed for the focus groups and it has been really interesting. They would be good to talk to because they are bridging both your model here and the real world deliverables, as well as trying to convince the university to look at this.

JY: Do you think branding, as a specialism in graphic design is more prone to using a process because...

TT: Because of the nature of their projects. They have huge projects and if they don't have a framework, as opposed to an individual designer sitting in their studio, it would be difficult to operate. I think you'll find a difference in that aspect. They might have 10 different people working on one project, so more inter-disciplinary and collaborative aspects are present.

JY: So they might be more open to this process than your average two-man design shop?

TT: I would have thought so. Unless this new generation of designers with their small studios develop and use this framework as their USP. They might use the framework to give really in-depth understanding to the client.

Interview ended due to time constraints.

9.8 Interview Transcript 2

This is the full transcript of the interview conducted with Catherine Dixon and Phil Baines, conducted on the 7th of June 2005.

Event	Interview
Date	07.06.05
Time	10.30-12.00pm
Location	BA Graphic Design studio, top floor, Southampton Row, CSM
Participants	Catherine Dixon (CD) Phil Baines (PB)

JY talked through her presentation of the typographic framework, which she presented in her peer review sessions. JY asked Phil and Catherine for their first impression of the framework.

Phil Baines (PB): I don't really know where to start. I supposed at the moment we still base our teaching around print-based stuff. A – because we know a lot about it. And B, because most of the sensibilities that you would get from that kind of understanding and knowledge still have value when you move to screen and so on. Then there would be more specific local factors.

Catherine Dixon (CD): I think it's true that we don't teach typography as a set of absolute rules. It's about balancing a set of factors. Although the projects that we set are based in very specific media. In the projects that you set students, you can't cover every typographic eventuality. So you are teaching a sensibility, things that they need to watch and for them to understand a degree of flexibility and how they apply them. Whether they are working in a book or on screen, you would expect them to be taking into consideration that they are different.

PB: Umm *(agreeing)*

CD: It's that kind of flexibility that they will base their decisions on.

PB: One other thing that we also base our teaching on, is an analysis of material.

CD: Yes.

PB: So we won't talk about Form and Modernism. We will actually talk about materials and analyse how something needs to be used. What is the most important thing? What is the 2nd most important thing?

JY: What kind of materials?

CD: As in the raw material, what they are designing on and with.

PB: What is the hierarchy? What is it trying to say? What are the relationships between the materials? If you work from that way round, that way of thinking holds good in whatever designing you are doing. If you can get your head round to that kind of thinking, you can't design. So, whatever else we do, we based our projects around that. If they were doing a book project, I would be looking at what it looks like. If it looks really slick but it doesn't address any relationship between the fundamental materials, then it's a poor mark. I don't care what it looks like, because that it is the 2nd stage not the 1st stage. So we will teach it from that way round and I think that sets them up better as designers. That for us is key.

CD: We try to avoid stylistic impositions. In some places, typography can be taught very dogmatically. 'This is right and that is wrong, you should be doing it like this' and it's all that 'crystal goblet' stuff. We are interested in what is appropriate or inappropriate, given the bigger picture and the context of the design. If a student has rationally thought it through, they will come up with an appropriate solution when they have thought about the key relationships in their design strategy. Maybe the style that they adopted is not our cup of tea, but that's fine, where else in other colleges, you can get too much of the tutor's personality, as in too much of their stylistic, personal style. We try to hold back from that.

JY: Have the way you taught typography changed based on different student needs or profile?

PB: I supposed it has in a sense. I have been teaching here since 1991. I have been the only specific typographic tutor for most of that time. And then the person who used to teach typography in the first year left, which is when Catherine became involved in the course, towards the end of her PhD. So the last 5 years, it's been us refining what we do and it's been our program based on our research interest and professional practice. Because we tend to work with the students in 1st and 2nd year, a lot of their screen-based projects haven't really happened. So we are teaching it through print-based projects because it's easier at that point and you don't have to get into too many technical issues. I think also perhaps, until fairly recently, some aspects of screen design have not been stable enough to talk about. Now we know a bit more from some of our ex-students, such as Jack Schulze, Matt and George. We know more about coding and what can be done, but I despair at doing anything with web design because it's so user-dependent and so reliant on their web browser.

JY: But don't you think that is part of the characteristics of the medium?

PB: Well, I think it has been, but now you can have more control over it.

CD: A core philosophy of typography is management of information. It's about equipping the students with those analytical skills, so that they can work with information. Whether you can get to this level of visual and aesthetic refinement that you might like in a web environment...If they go in knowing 'this is important, and this is not so important, and I need to break this down, etc'; those are the same skills required for print and they are transferable. I think in terms of modifying teaching, I'm conscious of having modified the 1st year program, partly that is to do with time constraints and just having less time to spend with students. And partly, I now realise, students come with a really mixed bag of experiences. I know there is one foundation with a really old-school typographer, who's got to be really old. I've never met him, just heard about him. He gets students to buy a slide rule. I've never used a slide rule in my entire working life. He gets them to buy this thing, which just sits there on their desk for years to come. So some of them come in very hostile.

PB: Well, do they learn the logarithmic scale?

CD: Well, no they don't and they think typography is a torture! So, my main task when moderating the first year curriculum is to unpick what they have learnt before and then to start off by getting them to enjoy letterforms. 'Wow, letterforms can be really interesting!' And to have them experience that. They assume that when they learn typography, they will sit in front of the computer. So actually, I do the opposite. They are all wrong-footed by that. So in that sense, that's how I have modified the classes based on experience of student groups and hearing their feedback about their experiences and where they are coming from to our classes. I then modify projects, either in their length or complexity based on what the students and I can deal with in terms of the teaching environment. But that's not so much about the subject; it's the same kind of thing that we are trying to teach them about responding to the needs of the projects that they have been set. It's not about learning a fixed set of ways.

JY: How do you start getting the students interested in type, do you start them off at looking at the form itself?

CD: Yes. The 1st week, which I teach, is quite intensive. I described it to an ex-student from Reading, because he was coming to cover for me when I was off – and he said it was a lot more what we are doing in CSM compared to Reading. I start of using a blackboard and we draw really

basic, Latin, Roman inscription in caps, we draw some uncials, we draw some humanistic minuscule; we talk about the shape of moving the pen. They all mock up the pen and draw it out to just experience how the stroke changes by the way the pen is held. And then going we would go into type. They get to analyse lots of different typefaces, which we will draw really big. They then get a set of project where they are given typefaces whereby they have to live and breathe that typeface and then come back and present it, in whatever form they choose. So we had dramas, dances, and outfits with models.

PB: Type is the subject but not the output of the project.

CD: Yes. In fact we had typographic wallpaper that was quite good. It's to do with the cultural association and forms. It's about getting them to realise it's not arbitrary and that these things are loaded.

PB: It's about the letters and it's about what the letters can do. It doesn't matter where the letters appear, whether it is spray-painted or printed on a screen.

CD: And in times, I have used my own research work...

JY: Your classification research?

CD: Yes, we do go through classification. But I don't teach history for the sake of teaching history. It's about what it tells us about the here and now. We talk about different kinds of pattern with type and the keys ones in the everyday repertoire. Talking about what each ones are suited for and not suited for. Talking about them in a very pragmatic sense. I've got some great feedback from students, who initially thought it would be a terrible class. It would be great if the students leave thinking that letterforms are interesting and it becomes a level platform and they are open and receptive to exploring and receptive to pushing that further on.

JY: In terms of looking at the specifics of my framework, the 2 levels, does it resonate with they way you teach and is it applicable to cross-media application?

PB: I supposed we...

JY: It is a formal division.

PB: Yeah, we wouldn't necessary divide things up like this, but different aspects of this would be introduced at different points. I'll talk a lot about this area ('content' category) when we get to 2nd year, to reinforce what Catherine has done in the 1st year. I'll give them typefaces to look at. It's a reminder of the different visual grouping, so it will reinforce what they know about the visual properties of the typeface, what they are good and bad for. The range of typefaces given is chosen to address some of the technical things as well. We will get into areas where we would address the computer medium, the ORC and so on. We will address the visual technical properties of the typefaces and why they look the way they do.

CD: This part comes out – the effect of printing techniques. We do talk about the effect of type and print, the effect of letterpress and the different visual qualities of typefaces and how they have changed. It's not about Story space or HyperCard – we also talk about how Bitstream Charter have been designed to render well on screen and that they were designed for low resolution printers. We also explain why contemporary digital typeface, can be used quite big or quite small. Whereas older typefaces such as the Monotype typefaces, you can only used them small because they were never designed to be big. It will optically distort horrendously. So these issues are present, but we do draw it out in a way that is different from thinking of a typeface through how it might be used with a specific piece of software. We are not really interested in this. It's to do with quantities of text, how much text and scale.

PB: Optical properties of text, when positive, when negative, when backlit, which isn't just a screen thing. When lit from behind, it works in a certain way, which is applicable on signing, than it is on screen or on print. It's an optical property. I would just try to stress those universal things as much as possible because some of the specifically technical things that is to do with how the screen work is addressed by the graphics tutors. When students are working on those projects, where type is involved in a significant way, they will come and bring their project to us and ask our opinions. They'll show us some animated type and we'll say you need to put some sound on it before we can talk.

(PB's leaves the discussion to answer the phone)

CD: How would you define the difference between those two statements – 'to represent written language' and 'to deliver a legible sequence of words'?

JY: The core difference is the clarity and legible level of the words, sentence and paragraphs.

CD: It's just a subsection of that. If you are representing written language, it can still be legible or illegible words. You'll still representing language.

JY: The genres were developed on an educational model, where you start by learning the form, then learning to set type in a paragraph, then moving into addressing the cultural, social and historical associations and moving onto the conceptual understanding of the medium and message.

CD: I supposed I will do the 'form' section in the first week, but all those 3 *(referring to 'content, 'meaning' and 'context')* will come together, because I don't set specific exercises on character spacing, inter-word spacing and inter-line spacing. But otherwise it's just projects, therefore they are negotiating all 3 genres at the same time.

JY: And what level?

CD: 1st year. We give them some text, written by a guy who works in our computer room and with Phil being involved with the Penguin books, we get the students to imagine that they are doing a dummy for a Penguin book. They have to do a biography page; they have to do the imprint, title page and then 40 pages of some short stories, I complete with chapter numbers and page numbers. It's basic, because there are no images, no captions, there is no complicated text and they can use running heads if they want to. That's the material that they are working with, they have to read it, and they have to understand the relationship between those things. It's about structure, the time-based thing of the book, about page sequences and the cover. It is text and image. They can explore the relationship between the cover and the inside although they are limited as it is a paperback. Some of this *(referring to the 3 groups)* would have come out through the 'form' discussion as well. They would have talked about form, but it is also about cultural identity and association, and strengths and weaknesses. 'What things could be used for?'

JY: Do you think it's important to get them to start looking at 'form' first, as a way to introduce them to typography?

CD: I think one of the most intimidating things about typography, or so students keep telling me, is that they are absolutely daunted by which typeface to use. They say, 'I don't know what typeface I should be using, I don't know what to use'. You can see why, when there are just thousands of them. Partly it's a really good way, I think a large part of what typography is about is that it is talked about as a language. There is a sense of grammar that you can make your own. You won't speak in somebody else's voice. It's also about looking and seeing, and increasing your sharpness

of your eyes. Focussing on form and getting them to start seeing the differences between different typefaces is a really good way into the whole idea of seeing space and form, and looking at things in a way they have never looked at them before. It's a really good idea to introduce them to that idea which runs through every aspect of it. It's also to do with the fact that they are absolutely daunted and intimidated. It's about providing them with a useful framework structure in which they can interrogate type by going through some common patterns and then showing them or giving them the tools with which to interrogate type. 'Does it have this? Does it have that? If it has that and that, then it must be this'. This allows them to make informed decisions when choosing an appropriate typeface. This is the reason for starting with 'form'. Two reason, to get them looking and to address their fear over typeface choices.

JY: And then as you progress, do you still refer to 'form', or do you start to move into the other 3 areas?

CD: I think we single this out, then these 3 just runs together. They continue to run together, but then there will be discussions about what typeface to use or not to use. Sometimes it depends on their work. Sometimes their work is about sheer enjoyment of form. And then you can talk about appropriateness or inappropriateness. These 3 groups just get run together. We don't do projects like the examples found in Ellen Lupton's book, where they just have projects concentrating on specific typographic principles.

PB: That's more like Weingart's style isn't?

CD: Yes, you learn to do this exercise and then you learn to do this other exercise...it's all abstract. We just don't teach like that, in such a staged way.

JY: So how would you describe your approach, compared to the more formal class like the Swiss?

CD: Integrated.

PB: Integrated and non-dogmatic.

CD: We're also not a typography course. So it's not Reading where it's a degree in typography.

PB: But how we do it is quite unusual for a general graphics course.

CD: Yes. The idea is to equip Graphic Design students with the confidence and the ability to be able to work in a range of situations. I think it's interesting that you (referring to Phil) don't call yourself a typographer.

PB: Hmm.

CD: We both call ourselves graphic designers.

PB: There has been pressure to have a typography specialism on the course and I've always said No. It's not a separate thing, as it would be in a specialised study. But there has be a question whether typography should be a formal specialism, in the way that photography and film is. I've always said that No, it had to be integrated. It's basically graphic design.

CD: It's a foundation to graphic design. Anything, which starts to say that this is Graphic Design and you can take typography if you want to as separate pathways, is misleading. It's the foundation; it's the bedrock of graphic design.

PB: If you can't do typography, you can't do graphic design.

CD: Because it is about information, if you haven't got the ability which are about typography then you should just stop, because you are just making wallpaper.

JY: Do they have a pathway in multimedia?

CD: E-graphics.

PB: It's a specialism within design, but it's not a separate pathway.
JY: So you come out with a BA in Graphic Design?

PB: It's all a named degree in Graphic Design with 3 routes. Students choose design, illustration or advertising at the start of their 2nd year.

JY: Do they specialise further?

PB: Within those routes, they can then opt for a number of subject specialisms, if they want to. For e.g. filmmaking, e-graphics, photography. They are extra specific projects set alongside

everything else. The background for most of the e-graphics or the filmmaking people would be design.

JY: At the moment the typography classes are compulsory.

PB: First year they are compulsory, 2nd year, typography is part of Design. So the Illustrators and Advertisers won't do it.

CD: Unless they want to, they come and find us.

PB: And some of them will sit in on projects.

CD: But if you are a Design student, you will do typography, it's compulsory in that sense.

PB: Yes, also in 2nd term, 2nd year, they have a choice of projects, but typography is not a choice. So they have to do it.

JY: In terms of percentage, how much does typography take up in the course?

PB: Of the year? My projects in the 1st term would occupy 25% of the unit. 33% in the 2nd term. 3rd term – there is no specific typography project. I do a project with my tutorial group.

CD: In the 1st year, it's 10%, which is slightly mis-leading because it is 10% but there are only 2 things which are compulsory, one is typography and the other one is the context, which is the critical contextual studies. And others are live projects.

JY: Compared to the other UK universities, would you say the percentage is a normal distribution for the course?

PB: I don't know really.

CD: I think it's very hard to compare. For e.g. in Ravensbourne, I was speaking to their head of Graphic Design, and they only have 30 students. I just laughed! I could not believe it. So it's very hard to compare. We have 512 students on the BA Graphic Design course for 2nd and 3rd year.

PB: The other thing, ours is a very, very broad course. There are not that many courses in the country that have kept the range of workshop facilities as we've got. We have etching, silk screen,

book-binding, letterpress, offset litho, high resolution image settings, photography - digital and old. All specifically graphic design facilities. That makes a big difference because the percentage of everything is relatively low, because everything is on offer.

CD: Again, that goes back to our non-medium specific way in, which teach design throughout the whole course. Briefs are set and then it's for the students to determine the most appropriate ways of responding to those briefs and usage of the different kind of media. So a brief might be set in Illustration, student might be using photography or AV, in any range of working. The brief could be set in Design, and any range of working could be used like printmaking. I had a 3rd year students a couple of years ago that did loads of etching and printmaking. He always felt a bit weird, because he was a printmaker but he was also a really good designer as well. So I do think that it is quite unusual, in that it is not medium-specific. We don't say design a website. We present a situation and ask students to come up with the best kind of responses. Think of the best way of working with this. It's about the way we work around problems and thinking about it. It's not about one solution but about different ways of looking at things and manifestations. Which can be quite difficult to...

JY: Assess?

CD: No, assessing is easy, it's the management of it that is difficult.

PB: I've just set a project this term and they've just had two things to research, there is no predetermined given outcome. So one of the starting points was the Routemaster bus. So somebody made a café! *(Laughter)* That was where they've taken it. There were games, there were designers' collectibles, and there were some graphic design outcomes, one made a QT movie. But they negotiated what the problems were and found a solution. There was supposed to be a nominal amount of material used, so if it was a print thing, it was an A0 sheet of paper.

CD: I'm always suspicious when people talk about the design problem and the design solution. The way students here are encouraged to think about is to question what the problem is and investigate it. Is that really the problem? Is that really what you need? You said you need a poster, but do you really? So actually you need a new website or maybe you need this? It is that sort of thinking around problems. And then working out how to frame that situation. They all respond to that in different ways.

JY: It sounds like a free-flowing course, from the description of the briefs.

CD: Yes.

PB: Certainly from halfway through the course it is heading towards that. First 2 terms in the 2nd year in Design, there are things we want them to do. So it is quite structure and controlled. We open it out in the 3rd term to introduce them to a way of working in the 3rd year.

CD: Once they have a core set of skills, I suppose it's about process and that kind of thinking about information and thinking about situations. We are always looking for skills, which are transferable in different situations. It's not to get away from the fact that we do encourage them to have an eye for detail as well. In typography it's about managing that sense of a bigger picture and having an awareness of the importance of the detail. In typography, it's a collection of a lot of tiny things, which might be insignificant in themselves but collectively very significant. It's not just for an aesthetic purity but in terms of what can contribute to text and the difference that can make to somebody's reading. If you clear out punctuation from bibliographies, they are much cleaner and much easier for people to negotiate.

JY: Going back to the framework itself, do you see it as useful tool for teaching, students or even designers?

PB: I think that the diagram is useful to demonstrate the relationship between global principles and local principles.

CD: *(In the background)* Yes, it's really useful.

PB: Showing an understanding on how knowledge is grouped.

JY: For students?

PB & CD: Yes.

JY: Do you get students coming back to you with typographic problems when they are working on screen-based projects?

PB: Yes.

CD: But I suppose they would not differentiate between working in screen with a print object. They would have had a try, thinking things through and they might have struggled. But I don't

think they would differentiate between working and having problems on screen and working and having problems on print. Do they particularly?

PB: Not really, I think in some way graphics is slightly more standalone and is less integrated with Stage 2 Design. It is starting to raise a few problems in that some of the students don't know as much typography because they haven't had the same training as some of the students before them. And that's just starting to emerge. Due to how some of the way the classes have been rearranged in the last 18 months. So there are things that need addressing.

CD: In my experience of trying out categories, while I found them useful, I eventually abandoned them. For e.g. things like technology, when you are saying page numbering, that's to do with orientation, that's a transferable attribute, whether is on a page, or a page on the net. They are the same thing but they also have different manifestations. Some of the headings here could be more like that *(referring to the Knowledge Matrix table).*

JY: More about the purpose of using it.

CD: Exactly, rather than the actual idea of a page or the folio because that could be misleading. Knowing where you are in relation to other things is a key.

JY: So if I could draw out similar themes...

CD: Yes, what are these things about? Grids & column- that's about structure. Fibonacci and the golden section is a structural aesthetic sensibility, it's also do to with margins and space. Structure and orientation is a large part of what that part is. Paragraph articulation – that's to do with the articulation of ideas and relationship between things. Again, some of that kind of vocabulary will help you. I think it's also the way you have listed them. X-height is critical, but 'ears' are not so critical. Only 'g's and 'r's have ears.

PB: There are two levels of importance isn't there? These are critical constructional, proportional relationships and these are specific features.

CD: Names for bits of letterforms – legs, arms, ears – they are just there regardless of the type of typeface but x-height, desenders and accenders – that's very important. The relationship between that sets of features is really important.

PB: Does anyone use picas anymore?

CD: Yes, Derek Birdsall does. *(Laughingly)*

JY: They have ems and ens on screen.

PB: Yes, but that's fine as they are proportional units.

CD: I find this distinction (referring to 'content' and 'meaning'); I find it really hard when you start looking at text display categorisation. It's really difficult these days because it's not so clear cut. And the distinction between 'context' and 'theory and application', and 'type as signage' under 'content'. Actually 'type as signage' is very much to do about 'context'. That's just where the categories are merging.

JY: I'm not saying that they are separate, what I do envision is a framework based on different parts. For someone coming into type new, this is very simple breakdown of the purpose of using type. There are some repetition as I realised it was impossible to separate the subject area.

CD: I think this is quite interesting, Blackletter is a weird type, - it's like Old English but not really the same. But the historical association – one thing I'm wary about when I talk to students about historical association but I also show them examples on how people play with that and are deliberately ironic with that. So they get a sense of that historical association but are also aware of the backlash. For example the 1970s type designer, Ed Benguiat, who designed the Beguiat typeface, it screams turn of the century, curvi-linear and exaggerated proportions. It was really influenced by Art Noveau but when you look at it from our point of view and show it to anyone who was in typesetting during the 70s, they immediately associate it with the 1970s. So yes, it is turn of the century but it screams 1970s. There are layers of association. I'm wary of historical associations, as they are movable and have slippery associations which they transcend and then people play with them.

JY: So I think it merges into the social & cultural associations. The idea of revival and association based on stereotypes.

CD: Things often have multiple meanings.

PB: Letterforms have these several lives, when it's got several associations used in different situations. So actually through usage you could give the typeface different historical associations appearances, because that's just it's history.

CD: Blackletters - when I show them to students, they think certificates.

JY: Different generations of students will have different ideas of what the typeface would represent.

CD: Very much. Hugely.

PB: Yes. Depends what you know about Nazism too.

JY: In terms of practice, how do you see this being used? How do you see it being transferred into a practice context?

CD: I think, going back to what Phil said about your diagram – it's really helpful. But I think it's about layering the content and it's about staggered delivery. There are some things practitioners would like to have, like that set of global values. If you can deliver that in quite a succinct way, it would be really useful. And then there is another level where by you might want to talk about, for e.g. Orientation, Structure, etc. I think there are several levels here. I wouldn't want to deliver this to anyone in this degree of complexity. I think it's about identifying the stages to know what to deliver at what point.

And this *(referring to the technology category)* is talking about the context of a book, newspaper and thinking about where this is being used and where it's being used and that sort of production issues. Slightly different from 'yes, it's quite nice to use type as abstract image like how it has been explored in Art Noveau but that's a different context. Thinking about a set of projects for my 1st years, it's a poster project, one of my main things that I'm saying when I'm going round to critique their work, is 'what you are designing is for a page and not a poster'. They need to know the difference. So thinking about the differences and the purposes of different medium is very important.

Thinking about type, this would be something great if you could have a visual stockpile. It's a bit like Massenberg's Letterist image, which is so rich and immersive that you would not want to refer to it when you are working on a project. It is useful as background knowledge to the subject like your framework. In a project, I need to think about what context in which I am working, what is this thing I am doing. Whether something is going to be a newspaper, straightaway there is decision to be made about typefaces and the technology of the typesetting. Your awareness of that must be on the top where else that kind of immersive background knowledge of the field and the kind of richness of the traditions and ideas that have been explored (and obviously have

enriched the designer's experience) may not be quite suitable for somebody sitting in front of a computer wanting to find out answers to questions about the design process. It will help them but it will help them in a less specific way than some of these other things, which are more practical. Some of these things will inform a general sensibility and understanding of practice, and some of the subtleties of practice. Some of these will be far more immediate to do with manipulation of information. Some of them will also require more in terms of directive teaching. Some of these, I wouldn't even teach, but you would encourage them to go off and find out about them. Some of this could be more self-directed and some of these could be taught.

PB: Other people would teach them.

CD: Yes, other people would teach them but we don't. But other things are quite useful to have a bit more direction with it.

PB: Also, I think that level of detail wouldn't be applicable to practitioners necessarily because they are working and they have a sense of the world around them. A global overview of a situation that they can look into and recognise what they are doing, or looking to and helping them to understand it in a different way is useful. This level of detail might actually put them off or seem patronising or seen as inappropriate.

CD: I think that goes for some of the cultural stuff as well, they know their market, they know how it must look like, but instructions on how to get their message across and thinking about really basic things like space, line-lengths and articulation is really helpful. But they are already focussed on what they need to do.

I was thinking as well, in here about 'content', it's to do with approaches to punctuation and capitalisation, which is something we are quite strong on.

JY: Why is that?

CD: I think most people tend to over capitalise, especially in bibliographies.

PB: We encourage designers to have an editorial sense of language and language usage, but that reflects our interest as writers and book designers as well.

CD: Also due to our experience of working with amazing editors and having worked with not so amazing ones. How much that responsibility can fall on your shoulder, so we do try to equip the

students with those sorts of skills. The ability to not accept text as given. Sometimes there is no argument, but sometimes there is. Sometimes it's good to get them to question, 'ok, I don't need to have full-stop after my heading'.

JY: Is there anything else that you would like to add or comment on the framework?

PB: How far into your work are you?

JY: This is the last stage. After this stage, I will need to review comments and revise the framework based on these comments and write up.

CD: But in a way, your PhD doesn't have to be over; your PhD is about developing a framework, trying to guess the levels of time and relationship. In terms of trying to disseminate this and creating something that could be used by different groups of people or maybe your PhD is about 'ok, I've created this framework and I've identified different groups of people and actually they might use this in different ways'. And your next stage of research will be the development of the different things that would be used. Actually you could draw the line under the PhD.

JY: It'll have to be, from my short conversation with a few people, there are so many possible directions where it can go and I do think it needs to be adapted for different needs and audiences.

CD: Sure. But maybe if you just identified what those global things are, and how you might deliver it. It's quite hard at this stage of the PhD, I remember this myself, it's quite exciting, because you can see what you could do, but you have to reign this one in and finish it, before you can go on and do the other bit.

JY: That's when it becomes exciting, when you can actually do something with it.

CD: Yes, absolutely. I remembered that very vividly.

JY: I do want it to be practical and tightening it up on the theoretical part.

CD: If you created a website and you just worked out what those global principles are with different levels. That way, you have a place for people to go when they are unsure of what to do and can be used by them as reference, particularly for screen-based people, because the argument is that a lot of this has been discussed in print but it's about readdressing that balance and getting that understanding of what is applicable to that screen environment.

JY: After the PhD or before?

CD: Oh, probably after! *(Laughter).* But you won't want to know about it, a little while after, then you will be very tired. But later you'll pick it up again.

Discussion about the writing up process and experience. Also about enjoying the VIVA process.

End of interview